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MACFORMAT

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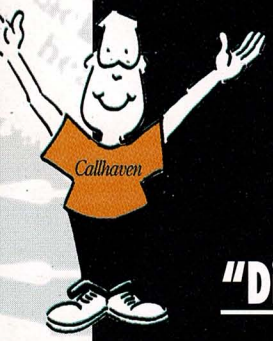

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MACFORMAT

ISSUE 37 ■ MAY 1996

The Finder

REVIEWS A-Z

Essential product reviews in this issue:

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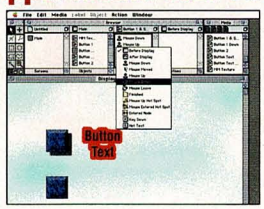
Inside all UK copies of MACFORMAT this issue, you'll find your chance to tell us what you think of us in the grand MACFORMAT Reader Survey. Fill it in and you could win a shiny new Performa 5300, worth £2,375, courtesy of those lovely people at Apple Computer!

HOW TO...

Create your own textures 68

Why spend a fortune on specialised programs for generating textures and surface effects – you can easily create your own with *Color It!* Here's how.

Make buttons in Apple Media Tool 72

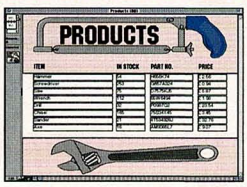


Make your multimedia presentations interactive with clickable buttons and highlights using this tutorial and the free software from last issue's Cover CD.

Search the Internet 74

It's a confusing and tangled Web. There's loads of information on the Net, so how do you find what you're interested in? Start with our guide to Net searches.

Use ClarisWorks macros 78



Speed up your life and make your work easier. Design your own personal shortcuts with the simple-to-use macro function in *ClarisWorks*.

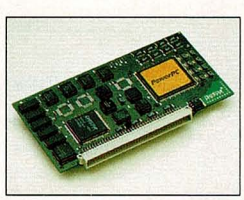
Add power to HyperCard 81

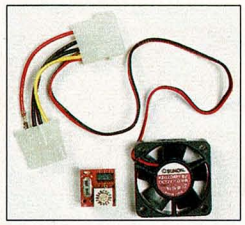
Expert tips for getting more from *HyperCard*, using XCMDs and mathematical calculations.

WIN! WIN! WIN!

Over £580 of upgrade products 142

If this issue's cover feature leaves you lusting after more power or a faster Mac, here's a solution – win your choice of upgrades to the value of £500 + VAT from specialist supplier Mygate Computing!





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Top stuff on the Net, plus new links from our own FutureNet Web site.

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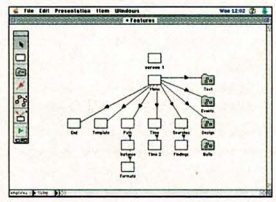
The shape of Macs to come, a new System update, Apple brings 3D to the Net and RAVE to games, and more.

What's New: product news 24

State-of-the-art 3D landscape creation with *Bryce 2*; eWorld closes; and PowerMac prices plummet.



Apple Talk: letters 28

Your views, visions and wish lists, plus the latest contributions to the Great 'Porn' Debate.

MacAnswers 85

The strange case of the disappearing System Folder, the mystery of the missing megabytes and the complete guide to washing your Mac. Confused? You will be.

Special Reader Offers 120

The best deals on some selected Mac products.

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Buy a new Mac, or all the bits you'll need to upgrade your old machine (including the fluffy dice).

Buying Advice 136

Chucking your cash about? Better read this first.

Classic System Crew 136

Chaos inside a Classic with the cartoon crew.

Next Issue 141

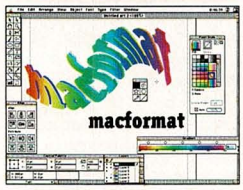
Struggling against huge odds, we'll be back in four weeks' time – here's a taste of what's in store.

REVIEWS

PowerWave 150 90
It's the fastest Mac ever (the fastest with only one processor, anyway), but it's not made by Apple. We test Power Computing's impressive new Mac clone.

FileMaker Pro 3 92
It's back (finally!)... it's bigger... and this time it's relational. Has Claris managed to improve on the Mac's long-standing favourite flat-file database?

Adobe Illustrator 6 96



Ooh look, curves everywhere! The new version of *Adobe Illustrator* has arrived – now with plug-ins. Has it taken the lead in the vector graphics stakes?

Utilities: InfoGenie 98
A straightforward database: simple, freeform and no rules. Sounds too good to be true?

Utilities: A Zillion Kajillion Rhymes and Clichés 99
Stuck for a rhyme? This could be a stitch in time. Need a cliché? This is like a sachet... er, full of 'em.

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Looking for your first sequencer? Find out whether this new entry-level program is what you want.

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FEATURES

FASTER SMARTER BIGGER BETTER MORE... 49

Want to boost your Mac's speed and power? Here's all you need to know about how it can be done, what upgrades and expansions are available for *your* Mac model, and even a step-by-step guide to how to do it yourself!

How your Mac works, different kinds of upgrades, and what they can do for you 50
Adding more RAM 53
Clever tricks and alternatives 54
Which upgrade? Options for every Mac 56
Doing it yourself – a step-by-step guide 60

20 Golden Years of Apple 33
Two innovative decades of the company behind the computer that changed the world.

Fold-out Mac family tree 34
The history of Apple 38
Where next? MACFORMAT interviews Marco Landi, Apple Europe's boss 40
Save money on the inside story of the Mac 42

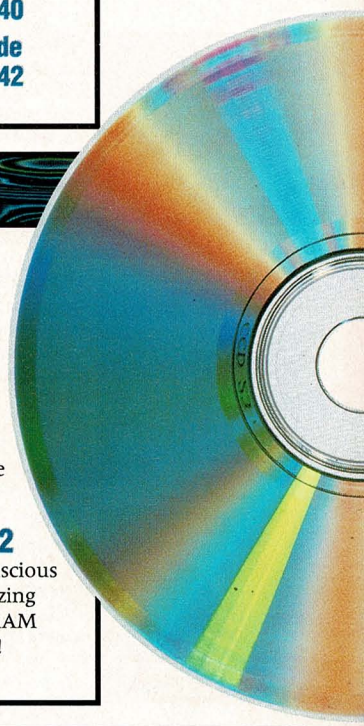
Yes, it's a classic. They all are. Find where your Mac fits in, using our giant fold-out chart.
See page 34

YOUR COVER DISKS

MACFORMAT comes with the choice of a CD-ROM or high-density floppy disk every issue:

Your CD-ROM 8
Demos galore, including *Star Trek Judgment Rites, Full Throttle, InfoGenie* and a rolling demo of Dorling Kindersley's *World Reference Atlas*. Plus a guide to upgrades, ten high-res sample images from Corel, over 100Mb of the latest shareware and everything below.

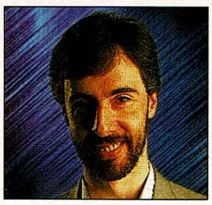
Your Cover Disk 12
3Mb of top software compressed on to one luscious floppy disk: a blistering arcade game, an amazing fractal generator, a comprehensive guide to RAM upgrades, handy utilities... even a fly swatter!



Welcome to MACFORMAT

Everything you wanted to know about MACFORMAT, plus our own earliest, most precious memories of Apple...

ABOUT OUR WRITERS

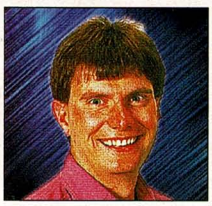


ALEX SUMMERSBY

Our Editor learned all he knows about Macs by using them, and fondly recalls *not* buying the first Mac he ever saw, a Plus. Its keyboard didn't have the square brackets he needed to use in his thesis, so he bought a CP/M lemon called a Kaypro II instead. Ah, what an idiot he was...

RICHARD HILL

While our meticulous News Editor was researching this issue's Apple biography, he came across a preview of the Apple Lisa in a computer magazine he had bought in 1983. He says it really brought back memories of just how alien the idea of icons and using a mouse was then.



COLIN DALZIEL

Our Disk Ed's first introduction to the Mac was at college in 1992. He was plonked down in front of an SE/30 and taught the basics of *PageMaker 4.0*. He says his eyes have never been the same since staring at those A4 pages on a nine-inch screen. We thought he was just misty-eyed...

LINDSAY BRUCE

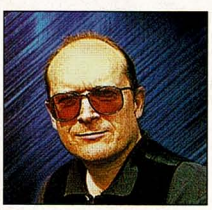
Our Technical Writer first used a Mac when his parents got a Quadra 660AV. He recalls being really confused about where you were supposed to type commands in. Half an hour later, the poor Mac was in 30 pieces and he'd hacked into the System with *ResEdit*. No change there then.

DEREK SMITH

Everyone can remember their first time, and our Del's was at school with a real Classic. She was small and short on memory, but ever so reliable. His saddest memory is when he dumped her for a more powerful model, but with an unfortunate habit of crashing. Mind you, he still married her.

ROD LAWTON

Our productivity software specialist's fondest memory: System 6. Lovely and simple, he says; used up just a few hundred K of RAM and you could get dozens of useful DAs that ran in about 50 bytes. Or serious power users could use MultiFinder... What went wrong?



BRIAN LARKMAN

Brian teaches graphics on the Macintosh, but his first experience of a Mac was in the early days when the only colour on screen was the Technicolor fruit in the menu bar. The Amiga seemed joyful in comparison and guaranteed to beat the world... Oh, how we get side-tracked!

ABOUT MACFORMAT

Welcome again to MACFORMAT, Britain's best-selling Macintosh magazine. Every issue we bring you:

- Tips, techniques and tutorials covering the range of Mac applications, from graphics, spreadsheets and databases to music, multimedia and games.
- Features about exciting Mac developments and novel uses, accompanied by Cover Disk programs whenever possible, so you can discover what your machine can do and try things you mightn't have tried before.
- All the latest Mac-related news, plus all you want to know about the wider issues, the people behind the headlines and the stories behind the stories.
- Authoritative reviews of interesting and affordable products, with clear buying recommendations.
- Cover Disks and CD-ROMs with demos so you can try software before you buy, useful utilities (specially chosen to complement features in the magazine), selected shareware programs, games, readers' contributions and much more.

Whether you're a veteran or a novice, we'll help you get more out of your Macintosh, whatever you use it for.

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■ We try to make ourselves available to answer Cover Disk related and general reader calls on Wednesday afternoons from 2pm to 6pm, so please try to ring then. We cannot answer technical queries over the phone – sorry! We hope you'll understand that because we receive so much correspondence we can't promise to reply to faxes, e-mail or mail personally, even if you include an SAE.

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MACFORMAT *does not review demos or unfinished programs.* We review only the finished products you could buy yourself, to help you decide whether to buy or not. We give clear buying recommendations, and rate products on this scale:

- 80+% means excellent.
- 70+% means well worthwhile, though not really outstanding.
- 60+% means good, but with a few shortcomings or some limitations.
- 50+% means acceptable but flawed.
- A rating below 50% means you should think carefully before parting with your money.

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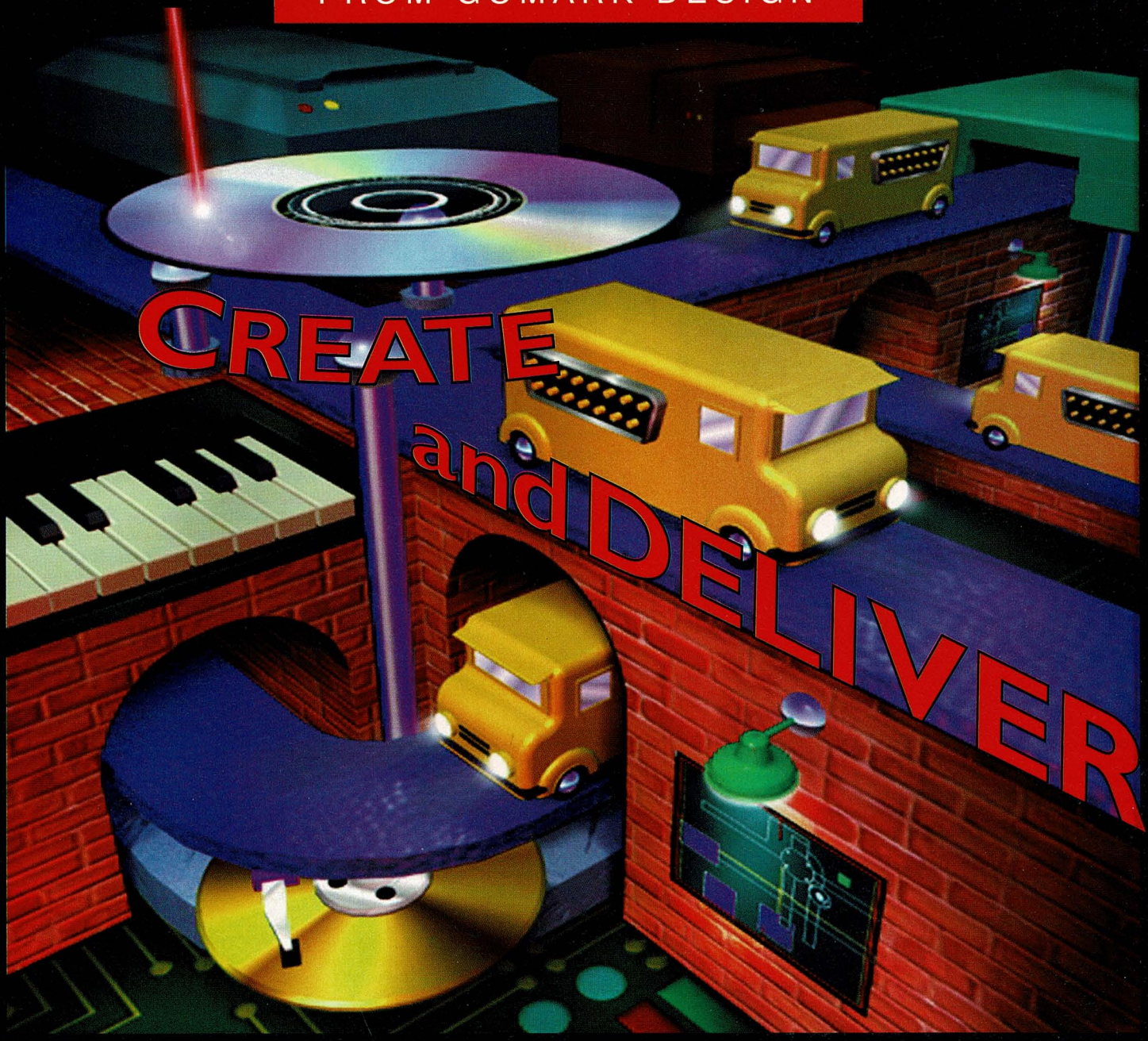
If a product earns a rating of 90% or more, we'll give it a MACFORMAT Classic Award. This means what it says: we judge the product to be a classic, a standard-setter of its type, something really special.

FROM GOMARK DESIGN



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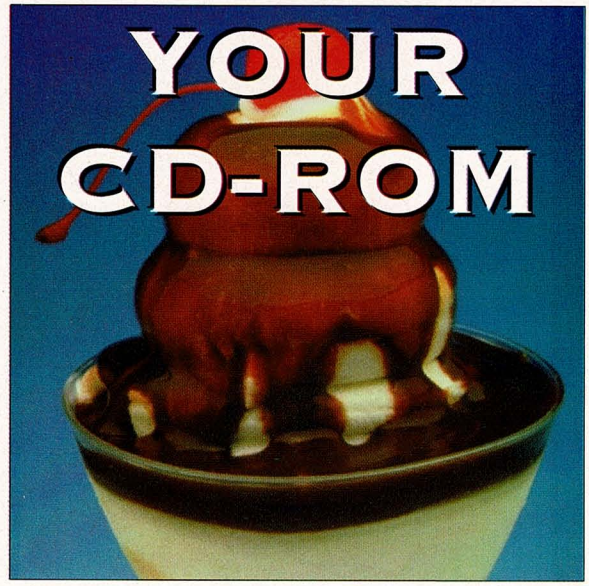


With his walking boots laced and his sandwiches packed, Colin Dalziel takes you on a guided tour of the scenic highlights of this issue's rural delight of a Cover CD.

This issue we have a great selection of games to complement our special *MacGamer* supplement. So rest assured, if you want to travel to distant planets with Captain Kirk and the *Star Trek* crew, or perhaps take control of the Allied troops in North Africa, you're well looked after. We also have a rolling demo of the Classic-award-winning *World Reference Atlas* from Dorling Kindersley and a tutorial showing you exactly how to upgrade your Mac painlessly.

- **Upgrading:** a walkthrough showing how to upgrade your system – see our feature starting on page 49.
- **AMT Tutorial Images:** all the files you need to accompany our *Apple Media Tool* tutorial on page 72.
- **Clip photos:** ten high quality photos from the Corel collection.
- **Demos:** games, multimedia and software demos.
- **Floppy:** all the files from this issue's high density Cover Disk.
- **Readers' Corner:** your art and software contributions.
- **Resources:** essential Mac files no Mac owner should be without.
- **Shareware City:** over 100Mb of the hottest shareware.
- **Shareware in MACFORMAT:** all the shareware reviewed in this issue – see page 115 for more details.

FLOPPY OR CD?

MACFORMAT is available in two editions: one with a CD-ROM and one with a high-density floppy disk. Details of the floppy programs start on page 12. The CD contains all the software that's on the HD Cover Disk, in a folder called Floppy.

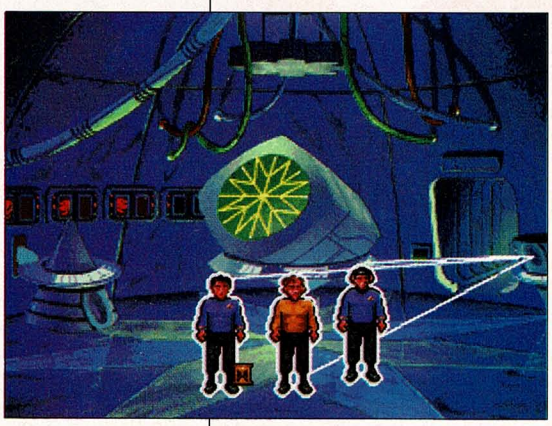
Star Trek Judgment Rites

Game demo

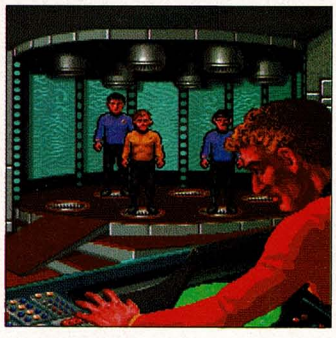
Requires: 4Mb of RAM, System 7.01 or later

As the legend of *Star Trek* continues, MacPlay brings the golden day of the space adventure to the Mac. *Star Trek Judgment Rites* puts you in control of the Enterprise with Kirk, Spock, Scotty, Bones and all the other old favourites. From the Bridge you have to find your way to the planet Balkos 3, where you must search for the source of a mysterious scanning device.

It's addictive fun, and it's great to hear the voices of the old crew as they go about the mission. You'll need 11Mb of disk space to install the game, and you must make sure you have the MACFORMAT 37 CD in your CD-ROM drive whenever you play.



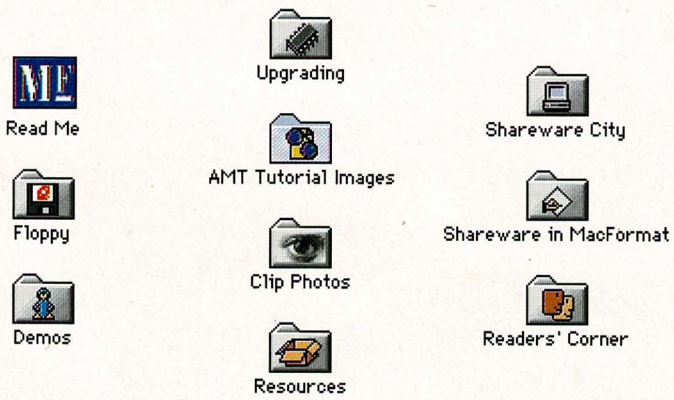
The crew beam down and the rest of the team breathe a sigh of relief. At least they know who won't be coming back this time.



MacFormat 37

603.9Mb

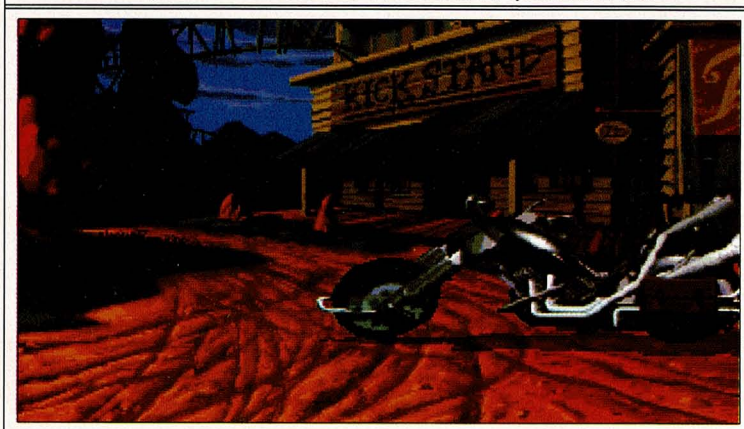
Over 3,500 files of programs, utilities, clip art, shareware, demos and much more



Full Throttle

Game demo

Requires: Performa 630 or better, 8Mb of RAM, System 7.1 or later



LucasArts brings you what must be the first ever heavy metal, leatherclad adventure game for the Mac. You play the part of Ben, a biker abandoned and left for dead in a dumpster. In this demo you can play through two scenes of the full game, in which you have to help Ben through puzzles to solve and fights to be fought. There's a review of the full game on page 124, so why not read our comments and put the game to the test for yourself?

PROBLEMS?

If you have problems quitting any of the rolling demos on the Cover CD, just press **[command] [Q]** and you should go back to the Finder. If this doesn't work, press **[command] [option] [escape]** to Force Quit.

Demos

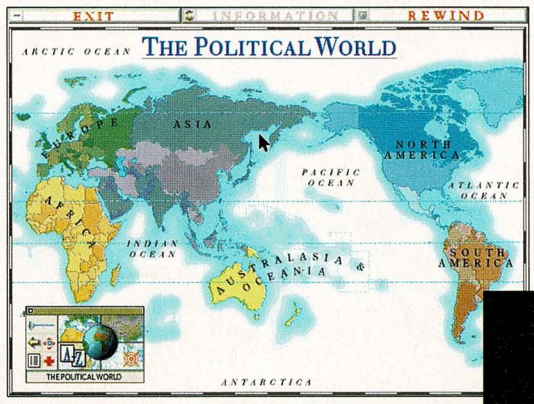
Various

Requires: see individual Read Me files

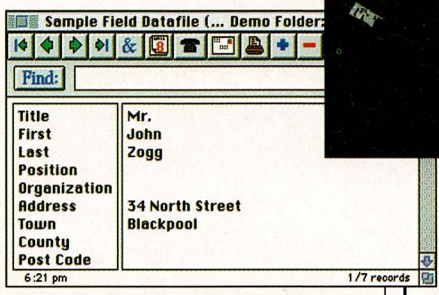
Zone Warrior is a PowerMac-only space arcade game in which you defend a space station against attack, asteroids and space debris. Your highly manouevrable ship is well-armed, but you'll need a steady hand to keep the target in your sights. *Zone Warrior* demands much more skill than your average blast-'em-up – care and control are vital.

For something more down to earth take a look at our rolling demo of Dorling Kindersley's *World Reference Atlas*. Our demo shows you some of the stunning features of this comprehensive reference CD-ROM, which scores 90% on page 111.

Our final demo is a time-limited trial version of *InfoGenie*. This easily configured database is ideal for all your basic indexing needs, and you can quickly configure the software for your own style of layout and reference. The demo is time limited for 30 days and the printing option has been removed, but you can save your work and update it. See the full review on page 98 for more information about what you can do, and how this enables you to organise your life.



Travel around the world, or phone a friend in Blackpool – these demos will help.



Strange inter-galactic space station urgently seeks defender of the peace. Must have steady aim and good eyesight. No previous experience required, ideal first job, please apply in writing...

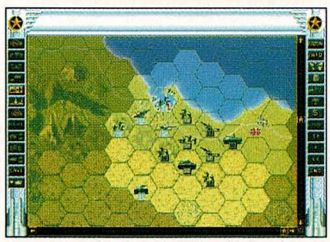
RUN TIME!

Some of the demos on the Cover CD require installation on your hard disk – they won't run direct from the CD. Most of these programs use an installer: once you've double-clicked on it just follow the on-screen instructions and you should be fine. Even if there's no installer, it often helps to copy demos to your hard disk – at the very least they should run faster!

Allied General

Game demo

Requires: LCIII or better, 7Mb, System 7.1



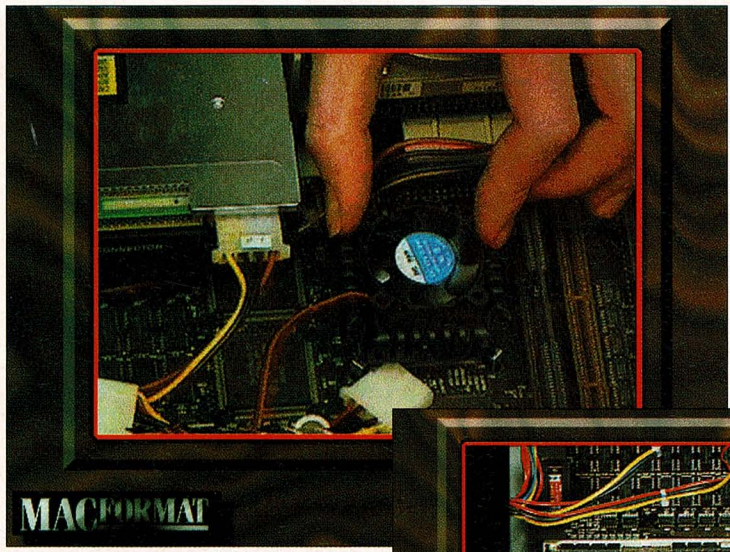
The year is 1940 and the Allies are trying to defend North Africa. Using your strategic skill and planning you must organise your troops as they mount an attack on the enemy forces – this demo enables you to play through two scenarios of the North Africa campaign.

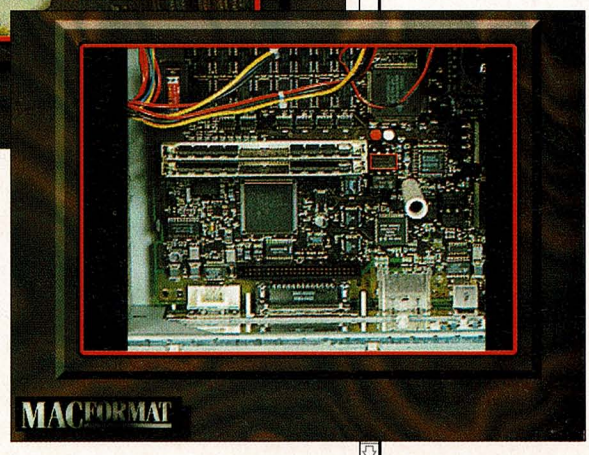
With its extensive video footage *Allied General* makes fairly hefty demands on your System – make sure you have QuickTime 2.1 and Sound Manager 3.1 installed. Both of these are included in the Resources folder on the Cover CD. If you're running short of memory, we've included a low RAM version of the game for you to try.

Upgrading

How to...

Requires: LCII or better, 4Mb of RAM, System 7.1 or later





We got MACFORMAT's top technical team (well, Lindsay anyway) to upgrade our Macs just so you can see what it's all about. If you've ever wanted to upgrade your Mac but were worried about opening the box, our simple tutorial shows you just how easy it really can be. This presentation shows you how to perform four different hardware upgrades: installing more RAM, adding an extra monitor, fitting a larger hard disk and speeding up your Mac using an oscillator chip. All this comes in the form of a slide-show with a soothing voice-over from Colin 'don't panic!' Dalziel.

CUSTOM ICONS

The icons we use on the CD help to give it a friendly atmosphere, but they do slow it down. Install *CDIcon-Killer*, which is in the Resources folder on the CD, if you want to speed things up.

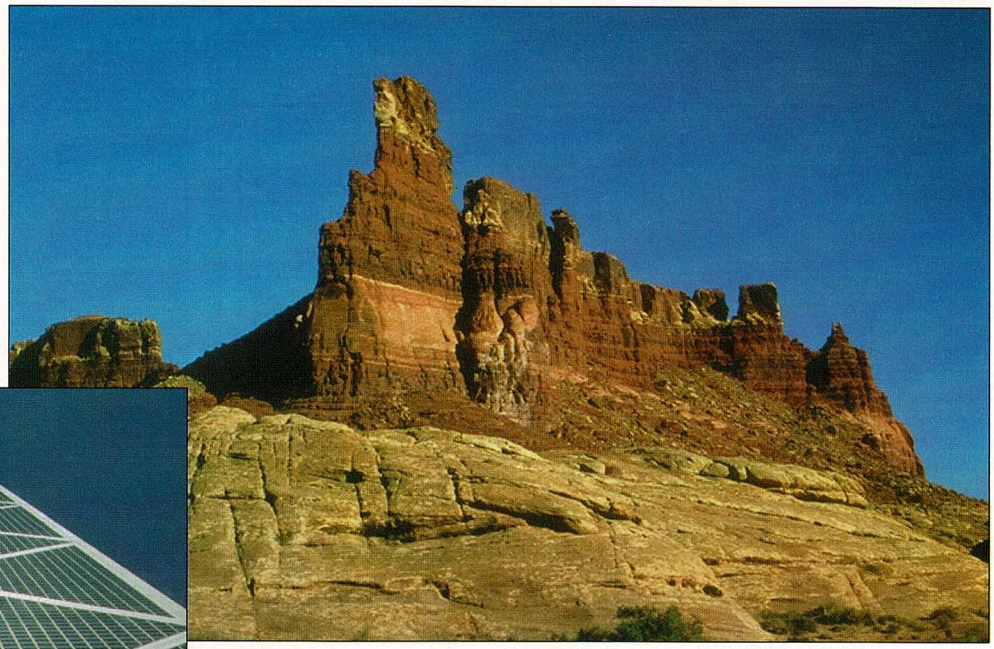
Continued on next page

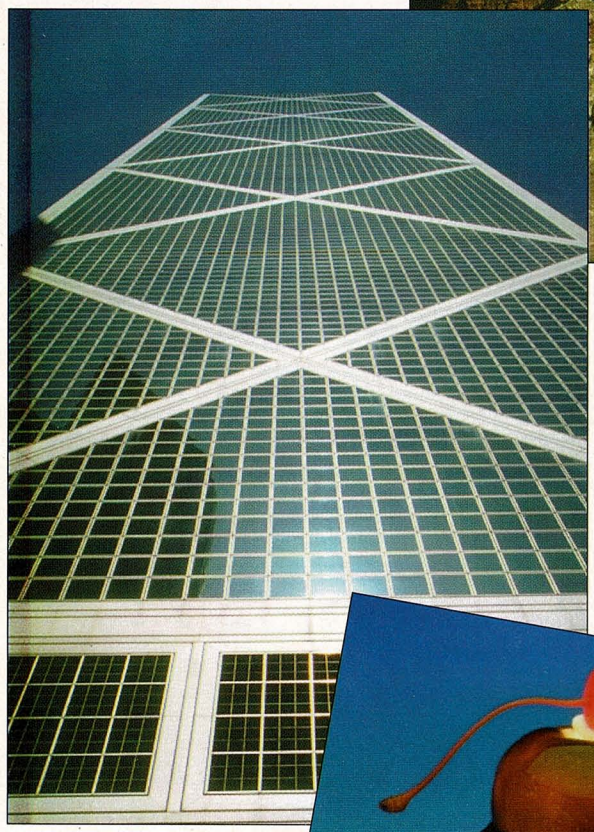
Clip photos

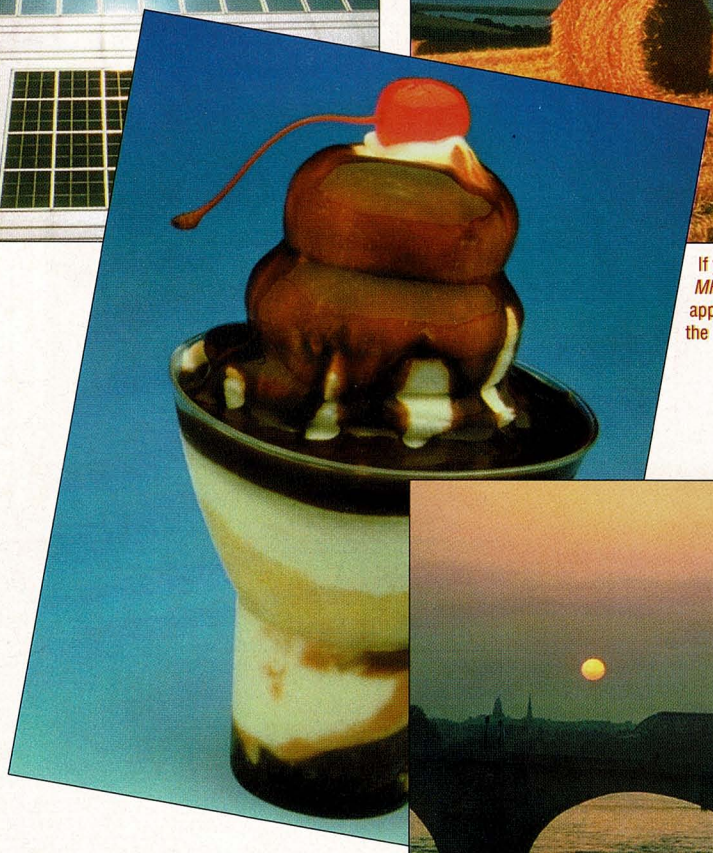
Sample images from Corel

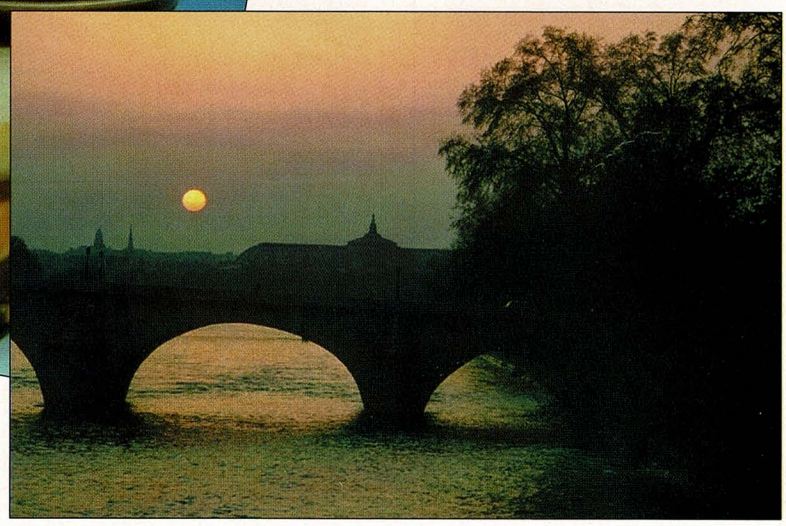
Requires: colour Mac, graphics software

Ten high res photos from the *Corel 2* collection. The images are in the PhotoCD format, which is supported by most major graphics packages. If you don't have the required software, we have also included the latest version of *GraphicConverter* in the Resources folder – so you can open the images and change them to a format that your favourite software supports.









If you want to quickly view one of the Corel images, try out the *MF37 Image Browser* from the CD. This is a stand alone application which enables you to flick through and quickly examine the images, without having to wait an age for each one to load.

CODEWARRIOR STRATEGY

On MACFORMAT 35's Cover CD we included the complete *CodeWarrior Lite* software, which enables you to create and save your own programs for 68K Macs. We neglected to make clear that the version included cannot open a New file directly. However, you can alter existing files without restriction and save over them. So, if you want to write your own program, we recommend that you begin by duplicating any of the files included with *CodeWarrior Lite*. Give the duplicate any name you like, then open it and you can work on it as you like and save it afterwards. Sorry for any inconvenience this may have caused.

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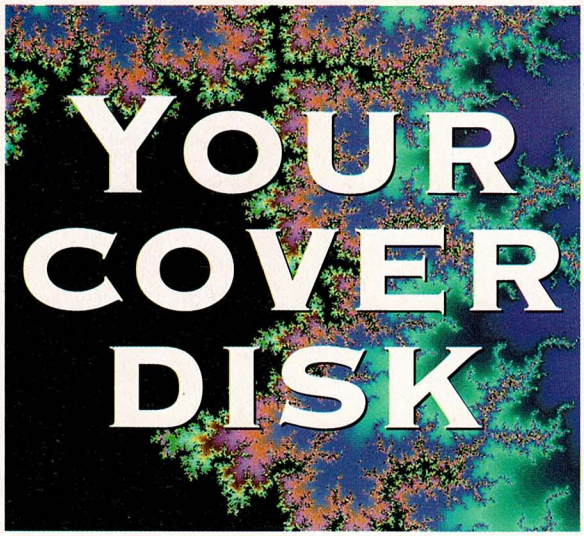


START HERE

High density floppy disks normally contain up to 1.4Mb of software, but to bring you as much as possible, we use a compression program to fit more on. So you need to decompress the software before using our Disk, and this issue you'll need 3Mb of hard disk space. We also recommend that you always make a backup of the MACFORMAT Cover Disk, just in case anything goes wrong.

Here's what to do...

Backing up your Cover Disk

1. Ensure that the original MACFORMAT Cover Disk is write-protected (move the tab so that you can see through the hole) and insert it in the disk drive.
2. When the icon appears on the Desktop, drag the Disk's icon over your hard disk's icon. This copies the contents onto your hard disk, but they are still compressed and cannot be used yet.
3. Drag the Cover Disk icon to the Wastebasket to eject the Disk.
4. Now insert a blank, formatted high density disk. Did we mention that you'd need that? Oops.
5. Finally, drag the MACFORMAT 37 folder from your hard disk onto the blank disk's icon to make your backup.

Decompressing the Cover Disk contents

1. To decompress the Cover Disk contents, open the MACFORMAT 37 folder on your hard disk and double-click on the MACFORMAT 37 icon.
2. You'll see a screen telling you about the compression utility we've used. Click **Continue** to go on.
3. A box then asks you where you want to save the software. Choose the place on your hard disk where you want everything stored and click **Save**.

Just a word of warning...

Before installing the Cover Disk, we recommend that you always back up any important work on your hard disk. This precaution will avoid problems should it transpire that any of the software isn't compatible with your setup.

We make every effort to check our Cover Disks for compatibility and viruses, but the information here is intended as a guide only, and MACFORMAT cannot be held responsible for any damage to data, any inability to use this software or any resulting losses. So please, take the precaution of backing up first.

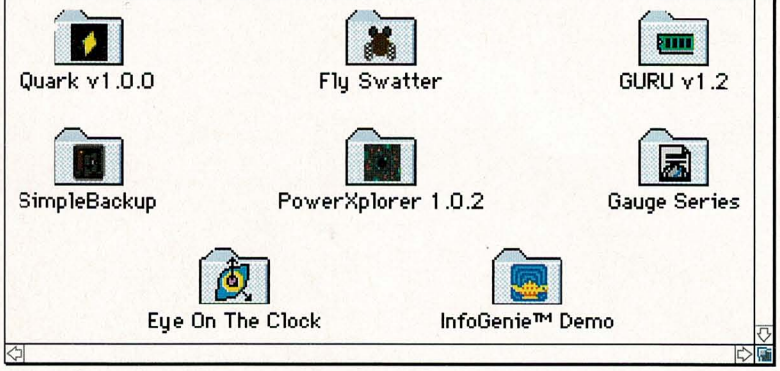
With his newly upgraded Mac twinkling away in front of him, Colin Dalziel zips through this issue's Cover Disk faster than a trout darting after his favourite fly.

Bulging with eight pieces of software, this issue's Cover Disk contains a varied selection of programs for you to try out. Whether you want to play games, find out what goes on inside your Mac, generate amazing fractal landscapes or just sit back and watch time tick away, there's something on this packed floppy for you.

MacFormat 37

Over 3Mb in disk

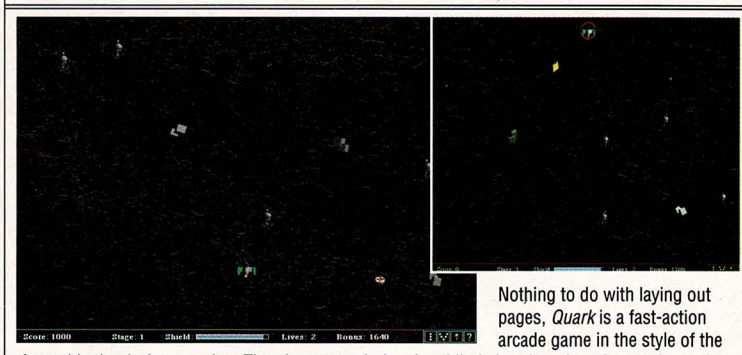
Utilities, games and demos



Quark 1.0.0

Game

Requires: LC or better, 3Mb of free RAM, System 7 or later

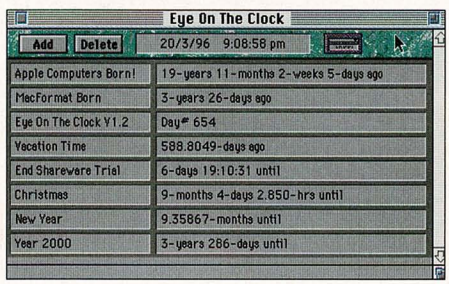


Nothing to do with laying out pages, *Quark* is a fast-action arcade game in the style of the *Asteroid* school of computing. There's more to it than just blind shooting, though – tactics and manoeuvring your ship are all part of the fun. The gameplay is smooth, and the action frantic all the way. The animation, together with wonderful sound effects, makes *Quark* as good an arcade game as you could possibly fit into 1Mb of hard disk space.

Eye on the Clock

Utility

Requires: any Mac, 4Mb of RAM, System 6.0.7 or later


Eye On The Clock
Add
Delete
20/3/96 9:08:58 pm
Apple Computers Born! 19-years 11-months 2-weeks 5-days ago
MacFormat Born 3-years 26-days ago
Eye On The Clock V1.2 Day# 654
Vacation Time 588.8049-days ago
End Shareware Trial 6-days 19:10:31 until
Christmas 9-months 4-days 2.850-hrs until
New Year 9.35867-months until
Year 2000 3-years 286-days until

If your life revolves around deadlines and remembering dates, *Eye on the Clock* is the perfect solution. You simply enter the dates you want to be reminded of, and define the way you want them displayed. *Eye on the Clock* does the rest for you, counting down the days, hour, minutes and even seconds to your important date. You can also enter dates from the past, so if you want to remind your boss how long it is since you last had a pay rise, why not put this on his Mac and hope that the penny drops, and the pounds rise? You never know...

GOT A PROBLEM?

If either your cover-mounted high density disk or CD-ROM is defective, return it to us and we will replace it. Please make sure you have followed the installation procedures described in these pages correctly, to ensure that there is a physical problem with the disk itself. Otherwise, the replacement will be just the same!

Return HD disks to:
TIB plc
TIB House
11 Edward Street
Bradford, BD4 7BH

Return CD-ROMs to:
MACFORMAT CD returns
Future Publishing
FREEPOST (BS4900)
Somerton, Somerset, TA11 6BR

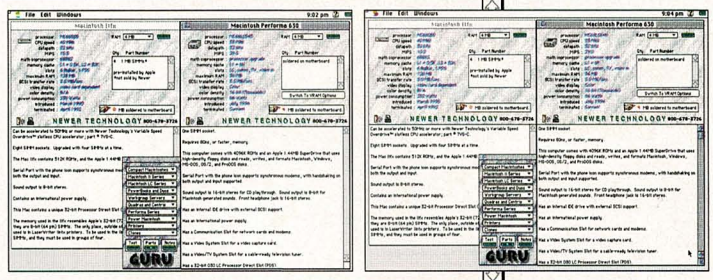
Enclose a self-addressed padded envelope (but we'll pay return postage) with the disk or CD, and a description of the fault. Please do not return disks or CDs to the editorial office; we don't hold any stocks of them and can only refer you to the addresses above.

GURU 1.2

Update guide

Requires: any Mac, 4Mb of RAM, System 6.0.7 or later

The *Guide to RAM Upgrades* or *GURU* is a comprehensive directory of just about every Mac ever made. It's not just a listing; there are details of all the possible RAM upgrades for each machine and information about how each Mac is configured. If all the technical details are a mystery to you, there's also an excellent glossary, which explains all the terminology and jargon.

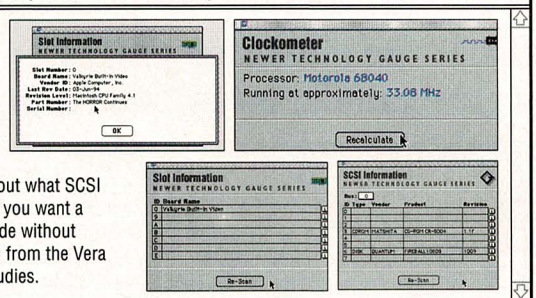


Gauge Series

Diagnostic utilities

Requires: any Mac, 4Mb of RAM, System 6.0.7 or later

A complete suite of utilities to help you put your Mac through its paces. Test everything, from the speed of your Mac to checking what cards are installed. You can also make sure your RAM is working as it should, and find out what SCSI devices are attached. Perfect if you want a peek at your Mac's technical side without needing a degree in computing from the Vera Lynn University of technical studies.



FLOPPY TOO

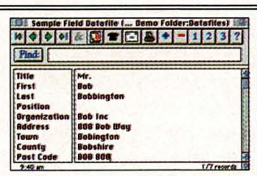
We are always on the lookout for readers' contributions for the floppy as well as the CD, so don't be put off just because you don't have a CD-ROM drive. Send them in to **The Disk Editor, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW.**

InfoGenie demo

Database

Requires: any Mac, 2Mb of RAM, System 7 or later

InfoGenie is a simple yet versatile database, which is easy to configure and quick to learn. This 30-day time-limited demo enables you to set up your data entry without any fuss, and you can import data and save files – although you can't print them out until you order the full version. If you want to organise an address book or catalogue your stamp collection, *InfoGenie* – reviewed on page 98 – could be the ideal choice.



SimpleBackup

Utility

Requires: any Mac, System 7 or later

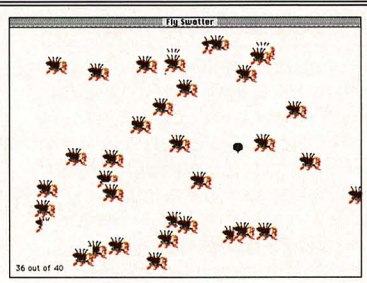
When it comes to backing up software, some programs will only let you do the whole drive – a real pain if you want to back up some of your files but don't want everything. *SimpleBackup* enables you to select the files you want and easily define where you're going to save them. To make a backup all you have to do is place aliases of the files you want to save in a folder – *SimpleBackup* then finds the originals and copies them to another drive.

Fly Swatter

Game

Requires: any Mac, 64K of free RAM, System 6.0.4 or later

It's not often you find a game that'll run in 64K of RAM, but *Fly Swatter* is such a game. It's very simple – possibly the easiest game to learn ever – and it's great if you're new to Mac and getting used to the mouse. You have a fly swat and when you see a fly you have to move as fast as you can to splat it. You can also set the length of time the flies stay on the screen, so if you're a new Mac owner, you can have the fly waiting around for two seconds, while if you're an old hand, you can set it to half a second and really put yourself to the test.

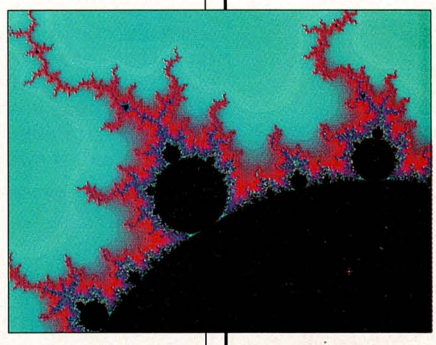


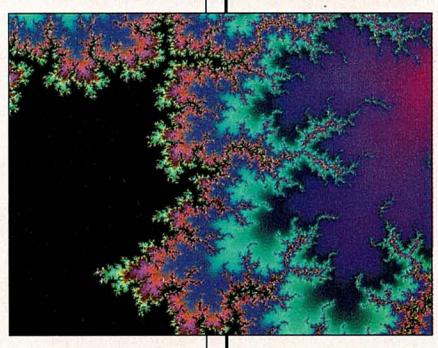
PowerXplorer 1.0.2

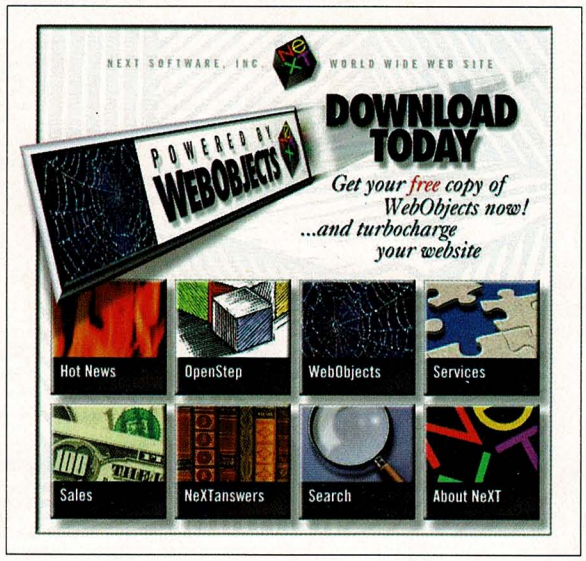
Fractal generator

Requires: LC or better, FPU, System 7 or later

PowerXplorer is a stunning fractal generator that enables you to produce amazing on-screen images. With just a quick click of the mouse, you're creating your first new world, then, once you've generated your first image, you can zoom into any section of it to explore a whole new textural landscape. The patterns are generated using a complex mathematical calculation, so to draw the images you'll need to have a maths co-processor or FPU fitted in your Mac (LCs and non-PowerPC Performas don't have one as standard). If you have a slower Mac, the images will take a while to draw and patience will definitely help. If you don't have an FPU, *PowerXplorer* will run (slowly) using *Software FPU*, available on the MACFORMAT 18 Cover Disk and every Cover CD.







The original Apple co-founder Steve Jobs now runs another computer firm doing clever stuff with all sorts of exacting corporations.

We take a look at the sites that add to Apple's 20th anniversary celebrations, including a glimpse of what happened to Apple's founders.

MACFORMAT doesn't only come to you as a printed magazine: there's an on-line version on the World Wide Web. We've selected some Web sites to increase your enjoyment of our biggest features this issue. You can reach them by typing in the address that appears after each site mentioned here, or you can use the links provided at MACFORMAT's pages on FutureNet. Just click on the relevant link to be taken instantly to that site.

Apple is 20

April Fool's Day this year was the 20th anniversary of Apple Computer. It's grown from a part-time business to become the most influential computer firm today – and one of the biggest. The Apple story begins on page 33.

The Apple Timeline (**http://www.info.apple.com/aboutapple/timeline.html**) is Apple's official version of how Steve Jobs and Steve Wozniak started the company, and the rollercoaster ride of Apple's progress ever since. While it's not exactly bang up-to-date (ending in May 1995), it's a nostalgic trip for many and a reminder of how things have changed.

So young. Steve Jobs and Steve Wozniak with their homemade Apple computer. Read all about it in the Timeline of Microcomputers.

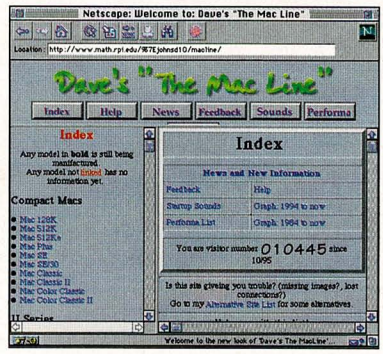
Always Apple (**http://always.apple.com/**) is more celebratory in tone. Welcoming newcomers to the Mac scene – or those who are simply curious to know what the fuss is about – it features regular updates of Mac news and views. It's something of a marketing exercise, but there are some sections where you can get involved.

You can also send in your own views on what you love about the Mac and participate in live chat sessions with top Apple brass. The likes of research chief David Nagel and multimedia master Satjiv Chahil star in question and answer sessions.

There are instructions on where to get the free programs for the Web chat sessions and how to use them with your Web browser, along with a schedule of forthcoming chats. But be prepared for a late night – the sessions are, of course, set to suit Americans. It's nevertheless a great example of how the Net can bring you closer to the people who make the decisions that affect your Mac.

Where are they now?

Two young men built a computer from scratch in 1976, little dreaming of the impact it would have on their lives – and ours. Steve Jobs went on to start up the high tech computer firm NeXT (**http://www.next.com/**). Co-founder Steve Wozniak now has a home page (**http://www.woz.org/Pages/Staff/Steve/steve.html**), which isn't the most fascinating ever published, but it's good to know he's around. In fact, you can prove to yourself that he's still around by using the WozCam – a camera connected to the Web and placed in the training room where he teaches.



Information overload: every Mac ever is subjected to Dave Johnson's exhaustive analysis – a goldmine of useful facts.

You'll find a bigger blast from the past at Dream Acres Farm (**http://www.dnacom.com:80/dream/**), which, although an unassuming place, is one of the few farms with a Web site. The folks there have a prototype of the very first Apple computer, the Apple I. You can read all about it and find out a thing or two about chickens while you're there.

If the Apple Timeline whets your appetite, the Timeline of Microcomputers (**http://www.islandnet.com/~kpolsson/comphist.htm**) is an ambitious guide to the development of the device that's changing the world. It starts from 1926 and the invention of the transistor that made the first computers possible.

Finally, Dave's 'The Mac Line' (**http://www.math.rpi.edu/%7Ejohnsd10/macline/**) is a Mac fan's labour of love that makes a great companion page to our giant fold-out Mac family tree. From the Mac 128 to the PowerMac 9500, Dave Johnson's Web site contains a thorough list of every Mac design that's been released, with details of the processors used, the amount of RAM in the case, the number of pins on the chips... RICHARD HILL

Getting connected

All you need to connect to FutureNet is a modem and an Internet account like CityScape or Maxis On-Line, or a direct server connection through work or college. There are no hidden charges – FutureNet is free! Use your World Wide Web browser to connect to

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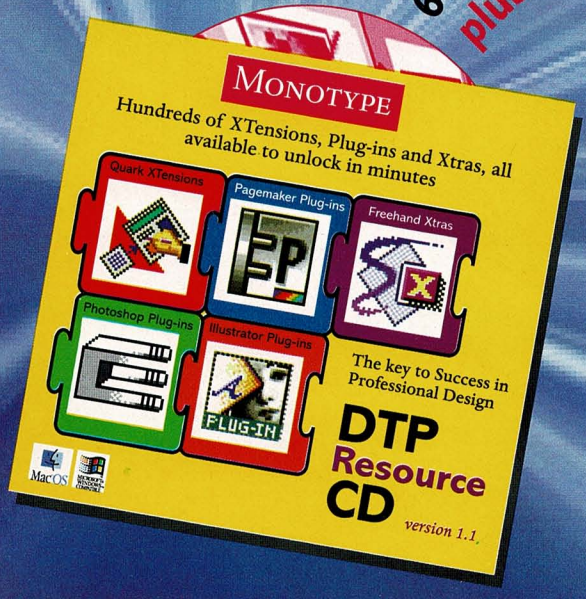

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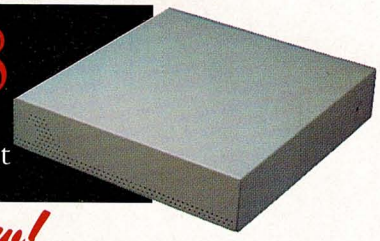

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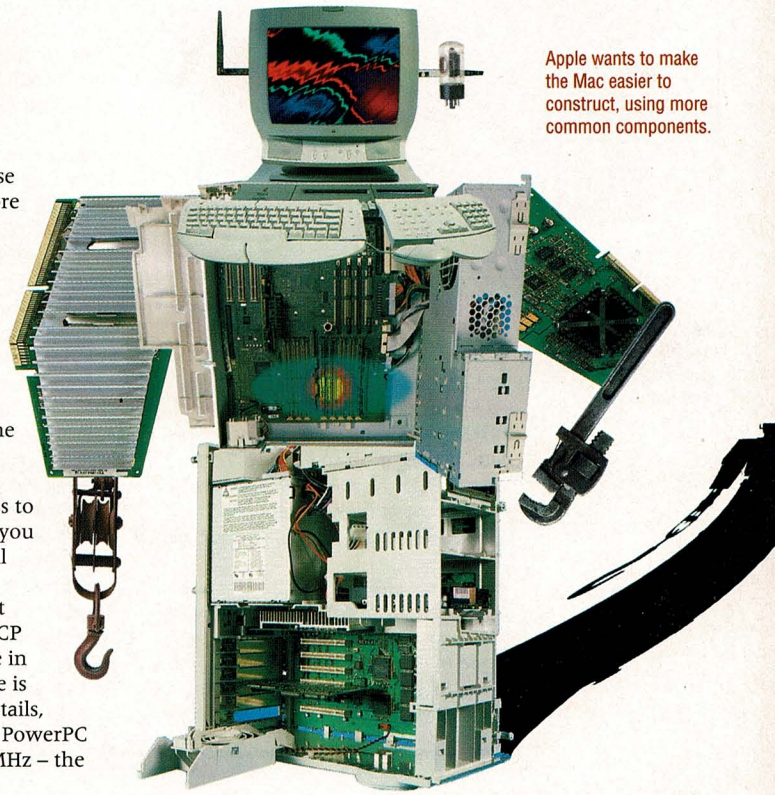
MACFORMAT NEWS

The shape of things to come: new Mac designs, QuickTime changes and the new Mac OS. News Editor: Richard Hill.

Future Macintoshes take shape



Apple wants to make the Mac easier to construct, using more common components.

Apple is said to be considering radical plans to change the physical design of the Mac, making it easier and cheaper to manufacture. A brand-new design for the Mac may take its place alongside the new PowerPC Platform (PPCP) machines planned for late this year, giving you a far wider choice of Mac systems than ever before – depending on your needs and budget.

Industry newspaper *MacWeek* reports that LERP (Low End Reference Platform) adapts ideas from the way PPCP will be built. The difference between the two systems is that LERP will run only the Mac OS, while its big brother will also be able to run other operating systems like Windows NT and the Internet-friendly Unix, making it more attractive to businesses.

While PPCP is set for November, there has apparently been no firm decision to go ahead with LERP. It's under consideration because it would make the Mac more attractive to other companies who are thinking about selling Mac-compatible computers: LERP is easier to construct and uses fewer of the customised parts that have led to Mac shortages in the past. A PPCP machine will cost more to manufacture than a LERP machine and, unless you need access to several operating systems, you won't actually need the full range of options it offers.

A second *MacWeek* report claims that Apple's first PPCP computer is due for release in November. Although Apple is still looking at the exact details, the machine is set to use a PowerPC 604e chip running at 166MHz – the fastest currently available.

Apple revival continues

Gil Amelio, the new head of Apple, is starting to make his presence felt.

The new Apple president is busy strengthening the company in his first weeks in the job. Apple faces losing money for six months, but Gil Amelio has taken immediate steps to get Apple's finances back on track: his first move has been to appoint new people to head up the finance and administration departments.

He also attended the Macworld Expo in Tokyo – now the largest Mac show in the world – where Apple showed the Mac OS running on a PowerPC Platform machine, as well as its latest Internet technology.

Amelio also gave some ideas of the principles that will take Apple into the future. 'We will be simplifying our product line, because I think it's become incredibly complex,' he said. 'On the other hand, we will add new, rich and robust features.'

He added that OpenDoc, the flexible new system where you bring different small programs into your document as you need them, is also going to play a big part in Apple's future. 'We feel that's a very important concept that will allow our developers to create new applications at a lower cost, and at the same time give the users greater flexibility as to how they want to set up that application.'

MACFORMAT TOPS 50,000

MACFORMAT is now selling an average of 50,053 copies an issue, according to the latest independent figures. We're the first British Mac magazine to hit the landmark 50,000 and now sell over 40% more than our nearest rival – so we must be doing something right. Thank you for your continued support.

Continued on next page

Bigger, better, faster Mac OS

New technology in the latest version of the Mac OS gives you access to live broadcasts over the Web.

New improvements to your Mac's operating system (OS) have just been made available that should make your Mac faster and more reliable. System 7.5 has received another update, taking it up to version 7.5.3. Meanwhile, Apple's video system QuickTime and graphics system QuickDraw 3D are both also set for big changes.

The new System makes your Mac carry out everyday tasks like copying files more quickly, and makes it less prone to crashing. It also gives you information on the contents of your System Folder – it lets you know exactly what each Control Panel and Extension is actually there for.

Open Transport 1.1, another part of System 7.5.3, is a new version of the system your Mac uses to connect to networks. Open Transport is now much more reliable, and can make your access to the Internet (which is, after all, just another network) faster too. Installing it on your Mac also enables you to use new Apple technologies like QuickTime TV, an Internet system recently used to transmit the huge Grammy record awards gala live over the World Wide Web.

Minor adjustments have been made to many of the technologies included with System 7.5.3, including QuickTime (now at version 2.1), QuickDraw 3D and Apple Guide. Desktop Printing is a new feature that enables you to switch between two printers without using the Chooser. You can place an icon to represent your printer on your Desktop, then drag any document onto the icon for easy one-stop printing. This feature was only available before if you had the memory-hungry QuickDraw GX installed.

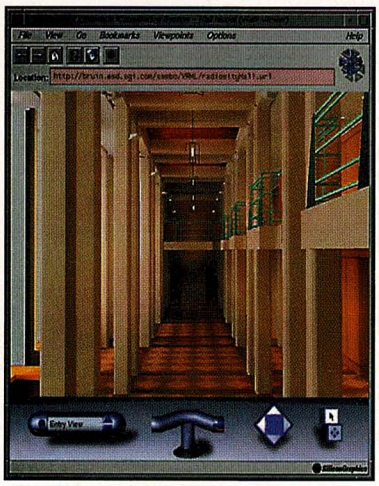
System 7.5.3 is available now in its US form (with the American spelling of 'color' and 'Trash' instead of 'Wastebasket'). A British version is due shortly, along with versions in other languages. System Update 2.0, which adapts your copy of System 7.5, 7.5.1 or 7.5.2 to the latest version, is free, although you'll need to pay to actually get hold of it – well, a little anyway. You see, we'll be including the UK version on the MACFORMAT CD-ROM as soon as it becomes available (in which case you get several extra megabytes for your money, plus a fine magazine...). But if you can't wait that long, you will soon be able to get it on CD-ROM or floppy disk through the distributor Computers Unlimited (tel. 0181 200 8282) – this will be a postal service and there'll be a charge for postage and handling. Alternatively, all language versions of System Update 2.0 will be available on the Internet as soon as they're finished, but there'll be around 20Mb of data to download, so get ready for a large phone bill. You can find instructions on how to download the software at the World Wide Web address **http://support.info.apple.com/update/update.html**

System 7.5.3 works with any Mac from a Mac Plus upwards, but you'll need 8Mb of RAM to do anything meaningful with it. It also works with the new PowerMacs that have PCI expansion slots, such as the 7200 and 8500 – these Macs previously relied on System 7.5.2, which wouldn't work on any other Mac.

Apple in Net revamp

OPENDOC FOR WORKS

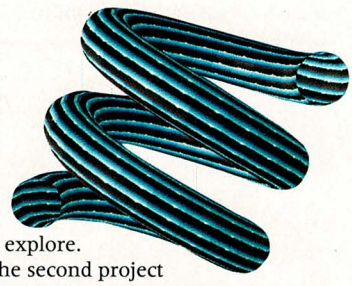
You'll be able to use Apple's component system OpenDoc in the next version of *ClarisWorks*, due later this year. *ClarisWorks* is a natural partner for the system, which enables you to drop different types of program – or component – within a single document. For example, you'll be able to drop a live Internet link into a *ClarisWorks* word processing document.



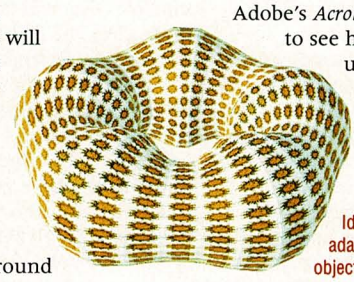
Silicon Graphics has enlisted Apple's help to bring 3D to the Internet – the Mac is to play a crucial role as the idea of virtual worlds catches on.

Two separate initiatives based around Apple technologies promise to radically alter the look of the World Wide Web. Moving Worlds is a joint project between Apple, Silicon Graphics and Netscape, and is designed to bring 3D environments to the Web. Meanwhile, a collaboration between Apple, Netscape and Adobe should see high quality typefaces appearing on the Web soon.

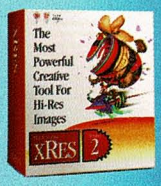
Moving Worlds will use the 3DMF file format created by Apple for its QuickDraw 3D system, enabling you to use your Mac to create 3D worlds that Web users can move around and explore.



The second project will establish a standard way of displaying fonts on the Web, based on Apple's TrueType font system. The three firms plan to work together to create a system that works both in the Web's typical HTML format and in Adobe's *Acrobat* system. You'll be able to see high quality pages created using any number of fonts at different sizes, without the pages taking a long time to load over the Internet.



Ideas used in QuickDraw 3D will be adapted to give you control over 3D objects and environments on the Web.



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New multimedia and games systems

New software from Apple, due over the next year, will make it easier to create games and multimedia on your Mac. RAVE (Rendering Acceleration Virtual Engine) is the first in a series of Mac OS releases that will bring wider standards to writing multimedia and game software.

RAVE works with QuickDraw 3D, Apple's 3D system for PowerMacs.

An extension to the 3D system used in *Havoc* (below) is one of the new ideas from Apple.

QuickDraw 3D was written to make it easier to use 3D across different programs in different ways – for example, it provides a 3D file format that any other supporting program can use. RAVE builds on this premise. If you write a game using RAVE, for example, it will work automatically with 3D acceleration cards from any company that supports the system.

QuickTime 2.2 is due in May and adds several new features to the system, which is already a major standard for video on Macs and PCs. Version 2.2 will offer stronger MIDI (Musical Instrument Digital Interface) features. As a result, video producers will be able to create more professional music and use it in a QuickTime video clip straight away.

Later in the year QuickTime will also be extended to work with MPEG, the high-quality video format, making it easier to edit MPEG video. And the long-awaited *Netscape Navigator* version of QuickTime is coming, which will enable you to play video clips that are placed within a Web page.

The biggest change of all for QuickTime is due early next year. Interactive QuickTime is a new system that does for designing and creating multimedia what QuickDraw 3D did for 3D graphics. As you may have read in our multimedia cover feature last issue, many authoring programs like *Apple Media Tool* and *mTropolis* are based on the idea of objects – self-contained pieces of interactive animation that you can use again once you've written them. For example, you could create a cartoon character who reacts in a certain way when you click on him, then transplant him into other programs for a series of adventures. Interactive QuickTime builds on this idea by establishing a standard for these objects, so that you can write an object in one program and use it in another. It offers you the ability to create a library of multimedia tools to use over and over.

RAVE increases the chance of more 3D titles that live up to the superb standard set by *Descent*.

Pippin to arrive by Christmas

Fractal buys Ray Dream

The firm behind popular art programs like *Painter* is to buy the maker of *Ray Dream Designer* and other 3D programs. Look out for more 3D features in Fractal's existing programs.

The first of the low-cost Internet consoles based on Apple's Pippin technology will be on sale here before the end of the year. Apple Europe's head Marco Landi told MACFORMAT that Pippin forms an important part of Apple's plans to get more people onto the Internet through the Mac OS. 'The major battle will be, more and more in the coming months, who will provide the easiest way to access the Internet?'

Bandai has already brought out its version of Apple's Pippin design, which uses a PowerPC 603 chip and a CD-ROM drive to run simple programs under the Mac OS. It's on sale only in Japan at present, but it will arrive in the United States in the Summer, then Europe later. With a new emphasis on Internet connection, Bandai is now calling its device the Atmark, after the @ symbol used in e-mail addresses. Pippin was originally envisaged as a low-cost multimedia player, but the Atmark costs around £400 in Japan, which includes a miniature modem you can plug into a socket at the back and a copy of *Netscape Navigator* for browsing the Web. Bandai is also offering a connection to the Net for around £12 a month, which includes access to exclusive services. It has licensed Sun Microsystems' Java system to take advantage of new developments on the Internet.

Bandai says 100 CD-ROMs will be on sale in Japan by the end of May. There are also ambitious plans to get businesses like banks, Internet service providers and phone companies interested in Pippin. See MACFORMAT's interview with Marco Landi on page 40 for more on how Pippin could have an appeal beyond the home. **MF**

The Atmark Player (far right) is the new name for Bandai's version of Apple's Pippin system.

publishing Internet complicated be unless can you a Power Macintosh. use

Internet publishing can be complicated unless you use a Power Macintosh.

Let's face it, the expansion of the Internet is a phenomenon to be ignored at your peril. Thousands of companies are already on the Worldwide Web, from fledgling start-ups to large international corporations – and the chances are, your competitors are already there.

The question is, if you're not on the Web today, where will your business be tomorrow?

But isn't it difficult? we hear you say. Don't you need to be a computing expert? Quite true, until recently. But not any more, because Adobe® PageMill™ for Macintosh,™ allows you to dispense with the need to learn the Internet's complex scripting language – HTML.

PageMill is the first truly user-friendly Web page design and editing tool, finally allowing you to create dynamic Web pages in the same 'point-and-click' way, that established Macintosh as the leading choice for publishing professionals.

You can even import text and graphics from a variety of sources. MS-DOS,® Windows® or Macintosh files – all formats are accepted with ease.

Small wonder that since its launch, Adobe PageMill has become the No.1 best-selling Internet Web authoring software.*

Add the powerful capabilities built into every Power Macintosh,™ such as QuickTime,™ for the creation of cross-platform digitised video clips and 16-bit CD-quality sound processing – and you've got all the tools you need to produce an award-winning presence on the Web.

Best of all, you'll be pleased to discover that the easiest solution needn't be the most expensive either, because with new lower prices, you can now get a complete Power Macintosh system for as little as £1,249 ex. VAT (£1,468 inc. VAT).†

For further information and details of your nearest Apple Dealer, call the Apple Information Centre today, free on 0800 243969.

Apple

If you already use the Internet, you can find out more about Power Macintosh and Adobe PageMill at the following Web sites: http://www.euro.apple.com/uk and http://www2.apple.com/pagemill

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WHAT'S NEW

This month: state-of-the-art 3D with landscape creation program *Bryce 2*, the end of a dream with the closure of eWorld, and news of the latest PowerMac price drops. Compiled by Richard Hill.

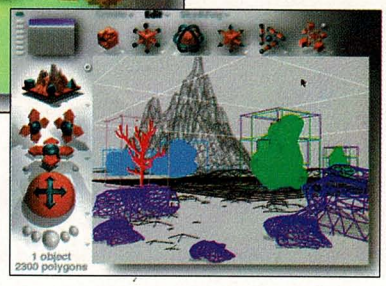
Bryce 2

MetaTools' landscape creation program is proof that working with 3D on your Mac is easy, and inexpensive. *Bryce 2* is more than the tinkering upgrade you get with most programs; it's a complete rewrite.

The heart of *Bryce* remains the way it enables you to design landscapes or textures in stunning detail for publishing, the World Wide Web, multimedia and games. It still has one of the most distinctive appearances of any Mac program. The interface has been redesigned, however, to give you more information while you're setting up your scene, and simpler controls.

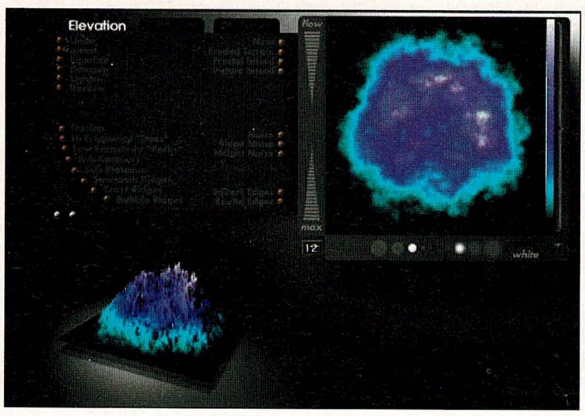
Bryce 2 offers you a new preview mode, where you can render a small chunk of your image in fine detail first.

The new version includes a new range of tools to help you create more natural-looking shapes.



Bryce 2 features a clutch of new interface ideas from the fertile mind of designer Kai Krause.

The Terrain Editor is a brand new feature that enables you to reshape mountains in real time.



The Terrain Editor is a new tool that enables you to adjust your landscape, and view the changes as soon as you make them. It also uses a form of mathematics called Boolean algebra, which means you can intersect two objects to create other shapes. For example, by making one object a mountain-shaped hole, you can create other unusual shapes. You can also bring in shapes created in other 3D programs like *StrataStudio Pro* and *Infini-D*, as long as they are in DXF file format.

Hundreds of shapes and textures are included to help you set up a scene in minutes. There's a tool specially for making rocks, ready-made clouds and water. New camera controls give you more viewing options – you can move around your scene in real time until you find your desired view. *Bryce* gives you a 360-degree landscape, enabling you to make an entire environment for a QuickTime VR clip in one go. (See MACFORMAT 32 for more on Apple's virtual reality technology.)

Your also have more control over lighting your scene, with a variety of different systems at your disposal, including a slide projector that enables you to project a 2D PICT image you've already made over your scene, wrapping it around different shapes.

Before spending time producing or rendering your final scene, you can use the new preview options to get a quick impression. A flat preview fills shapes in seconds without drawing the textures, so you can check the relative positions and proportions of different shapes. You can also render a sample segment of the scene or use Phong shading, a form of algebra that's not as accurate as *Bryce's* final rendering methods but gives a good impression.

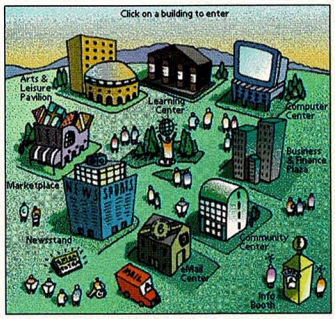
Bryce 2 is set to be followed shortly by *SuperBryce*, a program that will enable you to create animated sequences of flying through your scene.

■ Price: £234. Out: now.
■ Requires: Quadra (maths co-processor required) or PowerMac, 8Mb of RAM, System 7. A screen with thousands of colours is recommended.
■ Contact: Principal Distribution on 01706 832000.

NET NEWS

eWorld closes

Apple's online service, eWorld, was shut down on Sunday 31 March – the day before the firm's 20th anniversary. eWorld had provided exclusive Internet pages, conferences and connection to the Internet to 150,000 users worldwide, but Apple now



eWorld, Apple's virtual city on the Net, is now closed. Thought it looked a bit empty.

intends to focus on offering material only through the Internet itself, especially on the World Wide Web.

If you had an eWorld account, you should have received a letter in March informing you of the decision to close. You'll also receive a complimentary copy of the Apple Internet Connection Kit when it becomes available later this Spring. The kit will include programs like *Netscape Navigator*, with which you can get onto the Net, and exclusive tutorial programs to help you set up a connection in minutes. An e-mail forwarding service, which will run until July, will ensure you still receive any messages sent to your eworld.com address. For details contact Apple on 0800 127753.

AOL education offer

A major new online service is offering secondary schools free connection to the Internet. AOL UK, the domestic version of America Online, is providing access to AOL's exclusive online pages and, through them, to the Internet. Each connection gives you five user names and e-mail addresses, and you can also create your own home page with information about your school.

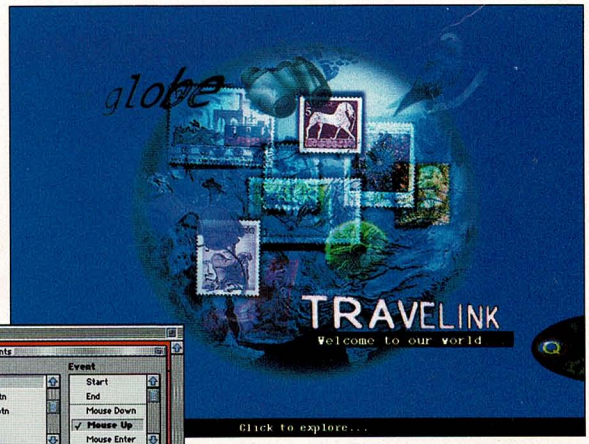
The Mac version of the AOL connection program isn't due until the summer, but if you'd like more information about the offer first, write to: AOL Schools Offer, The Fulham Centre, 20 Fulham Broadway, London SW6 1AH.

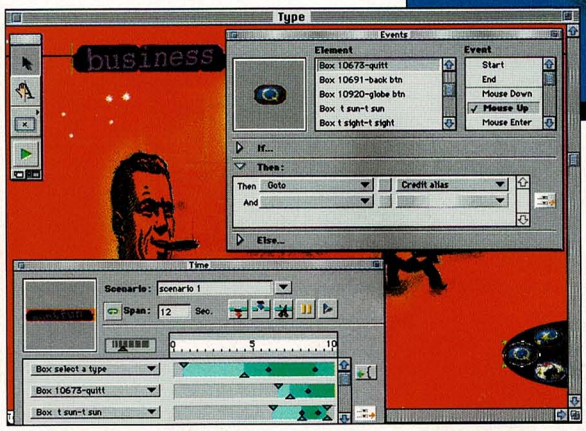
Fractal Web images

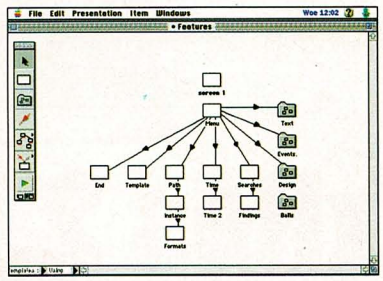
You could soon find Web pages quicker to load onto your Mac, with the arrival of a new image system devised by Iterated Systems. The Fractal Image Format (FIF) is based on Chaos Theories of mathematics, which establish equations that describe natural forms. Iterated's software takes an image and converts it into a set of fractal equations, making the space that the image file information uses up to 50 times smaller, and therefore a lot easier to send across the Web and faster to download. You can get a free FIF viewer from Iterated's Web site at **http://www.iterated.com/** – and read about forthcoming Mac versions of software that can convert your images into FIF.

ClickWorks

The latest addition to your choice of Mac multimedia creation tools comes from Scitex, a firm best known for its industry-level printing technology. Due in the shops in September, *ClickWorks* is designed to help you assemble video, audio and graphics into flexible and rich multimedia productions. Because of Scitex's industrial experience, the program has close ties with database programs,







The forthcoming *ClickWorks* will enable you to create interactive multimedia (top) using a variety of tools (above left).

which means you can use it to make CD-ROM directories.

ClickWorks offers you many ways of creating your production, including a storyboarding method similar to the one used to plan movies. It takes advantage of a wide range of other technologies, particularly the Internet. You can place live links to the World Wide Web within your CD-ROM presentations, which automatically link to the page you've specified and update the information for the user.

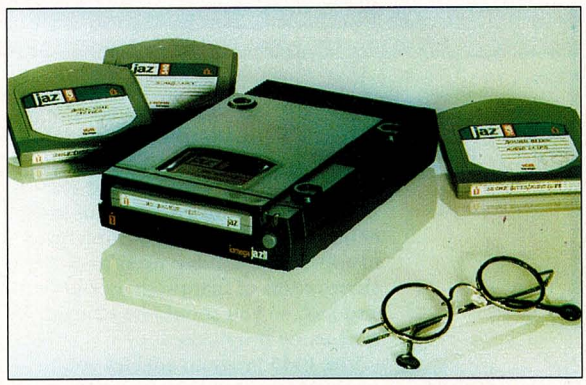
The program is designed to be as flexible as possible. Other firms will be free to write plug-in software to handle things like new printers or spell checking to add to *ClickWorks*. Members of a team working on a project can each work on a different section – *ClickWorks* will piece them together at the final stage and make sure the links between them work properly.

■ **Introductory price: around £700. Out: September.** ■ **Requires: TBA.** ■ **Call Scitex (Belgium) on 00 32 352 2617.**

Storage drive bargains

Removable storage continues to become better and better value. Iomega has released a drive it hopes will build on the popularity of its Zip Drive. The Jaz Drive is a £469 system that uses 3.5-inch cartridges, each of which stores 1Gb and costs £105. It can transfer data at up to 6.7Mb a second, making it as fast as some hard drives.

SyQuest's latest model is the SyJET, a compact drive that also uses a 3.5-inch cartridge, but a different design from those in the Jaz. It can transfer data at up to 4Mb a second and will cost around £410 when it goes on sale in May. You'll be able to get two types of cartridge: a 650Mb disk will cost £46.99, and a 1.3Gb disk, £70.49.



The Jaz Drive offers 1Gb cartridges and a rapid rate of data transfer.

■ **Call Iomega on 0800 973194.**
■ **Call SyQuest on 01734 880207.**

Continued on next page

PowerMac price cuts

Now Apple's most powerful machines are better value than ever, with some prices cut by over £350.

Apple's recent price cuts now make it possible to buy a PowerMac for as little as £975. The price of the 7500 has fallen by over £200, while the 8500 is down by more than £350.

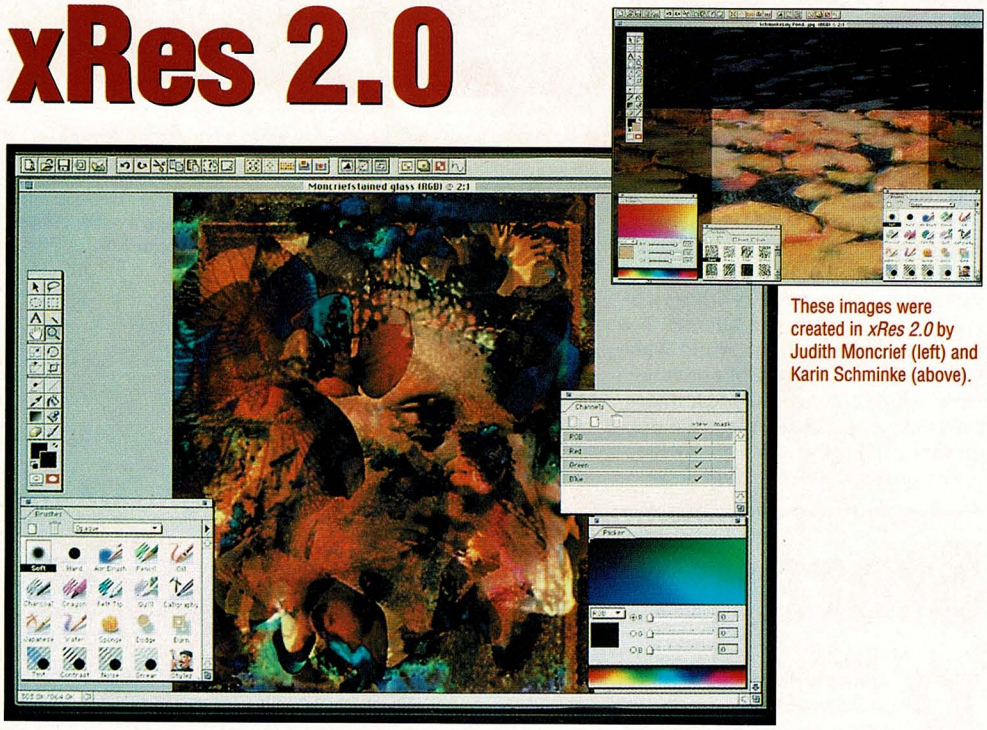
While the machines we've listed here come without a monitor, there's a special offer also available bundling a PowerMac 7200/75 with 8Mb of RAM, 500Mb hard drive and an Apple Multiscan 1705 17-inch monitor for the bargain price of £1,469.

You'll need to buy a keyboard with every machine listed here. These are the new estimated street prices including VAT – contact Apple on 0800 127753 for more details.

NEW POWERMAC PRICES

Model/chip clock speed	Processor	RAM	Hard drive	CD-ROM	Price
7200/75	601	8Mb	500Mb	No	£975
7200/90	601	8Mb	500Mb	Yes	£1,257
7200/75 and monitor	601	8Mb	500Mb	No	£1,469
7200/90	601	16Mb	1Gb	Yes	£1,586
7500/100	601	8Mb	500Mb	Yes	£1,933
7500/100	601	16Mb	1Gb	Yes	£2,274
8500/120	604	16Mb	2Gb	Yes	£3,760
9500/132	604	16Mb	2Gb	Yes	£4,066

xRes 2.0



These images were created in *xRes 2.0* by Judith Moncrief (left) and Karin Schminke (above).

Macromedia's range of multimedia design software, which already includes *Director* and *FreeHand*, now includes a powerful image editing program. *xRes 2.0* is intended to appeal to *Photoshop* users and shares some of that program's look and feel, so you should be able to start using it quickly.

The £645 program enables you to work with image files of over 20Mb more quickly, shifting and altering huge files in seconds. You can use more than 80 types of brush and customise them to create even more. Images can be created in layers, so you can change text that you've blended into the design, for example, without having to start from scratch.

There are also a range of features specially designed to give you good-looking text, including anti-aliasing to remove jagged edges.

xRes can also use files in the GIF and JPEG formats which are widely used in World Wide Web pages. There's a bonus Special Edition of *Kai's Power Tools 3.0* and 250Mb of sample images from photo collections by Photodisc, Digital Stock and others. Contact Macromedia on 01344 761111.

MessagePad 130

You can now get a deluxe version of Apple's pocket-sized MessagePad computer. The MessagePad 130 joins the 120 in the Newton Personal Digital Assistant range. Priced at around £645, it includes the award-winning Newton 2.0 operating system, with improved handwriting recognition, and adds 512K to the 120's 2Mb of RAM. The case has been redesigned to give you a backlit screen so you can use it in dim light, and is also more robust for heavy use. Contact Apple on 0800 127753.

Question Mark 2

The eponymous testing and assessment program from Question Mark moves up to a second version, which includes many improvements. The program enables you to create Mac-based questionnaires and tests for education or business purposes, and costs £586, although there's a special discounted price available of £293 for primary schools.

New features include the ability to place QuickTime video into your survey, and enhanced control over its format, with functions like time limits and putting the questions in a random order each time the test is taken. You can also write tests in other languages like Arabic and Japanese with the program's support of Apple's WorldScript system. Contact Question Mark Computing on 0171 263 7575.

3D World plug-in

Microspot's new program, which uses QuickDraw 3D to offer a powerful low-cost 3D graphics system, is now more versatile thanks to a free extra program. A plug-in you can get from Microspot's World Wide Web site (**http://www.microspot.com/**) enables you to take any piece of text and turn into a 3D object, making it deeper, adding textures and changing the angle it's viewed at, for example. The plug-in will also be included with the program from now on. For more details contact Microspot on 01622 687771.

From Pilot *to* Explorer, Hero *to* Golfer *all on your* Macintosh

Home learning, entertainment, reference or home office; you'll find the most helpful and exciting titles available for your Macintosh and your family in our new Macintosh Software Guide. To receive your free guide simply call the Apple Information Centre free on 0800 521 267 and we will rush you a copy.

You, a Mac, the world.

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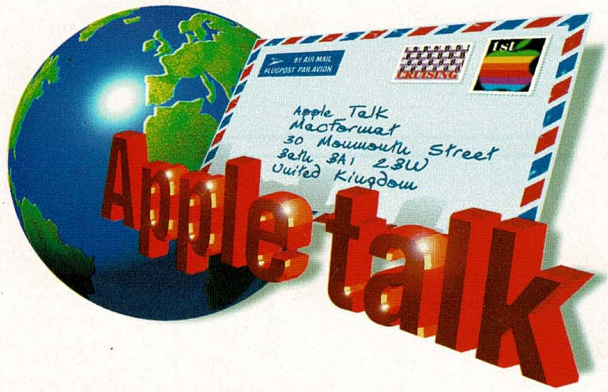


Had a thought? Share it with 50,000 other Mac enthusiasts. Write to: Alex Summersby, AppleTalk, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW.

Visions, illuminations, ideas – we've got 'em all! *And* we give away a binder in return for every letter published.

LOOK AT THIS!

Here's an eye-opener: every letter and postcard published on these pages wins a MACFORMAT binder. Yes, it's true – but if you can't see your way to writing, you can turn to page 120 and order one, identical in every respect. Only you will know the difference.

Virtual vision?

TRY THIS FOR SIZE...

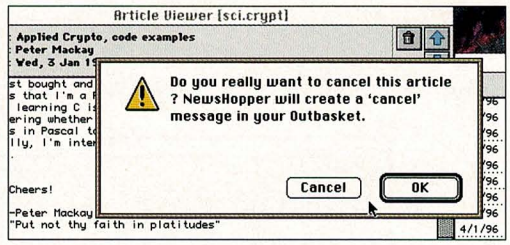
I read your feature about the 20 new developments which are about to boost all our Macs (MACFORMAT 33) and found it very exciting. However, there is this vision that I have, which nobody seems to have dared tread on: when is the monitor, the bulky box and keyboard going to be revolutionised? I sincerely hope that by the turn of the century, we will gradually do away with all that. I want to see *full* implementation of Virtual Reality.

My vision is to see cybermasks replace those horrible monitors, gloves replace keyboards (virtual keyboards will do fine) – infrared interaction should get rid of all those cables all over the place. I want to be able to move through a networked cyberworld, to be able to experience a cyberconference, with real people sitting face-to-face with me thousands of miles away. I want to be able to pick up a virtual paper and read it (see the film *Disclosure).* I want to do away with this awful apparatus we call the telephone – what the hell do we need that for any more? All this talk about virtual reality and *still* we're stuck to those conventional gadgets, like monitors, keyboards, printers and all that!

(Cyber)space: the final frontier... holodecks, the ultimate reality?

Salim G Ansari
European Space Agency/ESRIN
Information Systems Division
via FutureNet

Why stop there? Why not plug straight into the visual cortex and do it without the bulky masks and things? Then again, imagine the problems sitting down at the virtual 'conference table' on a chair that wasn't really there, or walking around and bumping into objects that were *really there but weren't virtually...*



Silly Things Your Mac Says, number 429, from Peter Mackay, this issue's token Australian. Peter explains that he posted on UseNet, then thought better of it and went to cancel the message, with this result. He says he didn't know whether to Cancel or Cancel...

Bugs in ClarisWorks 4

YET MORE STICK...

I read with considerable interest the letter in MACFORMAT 35 about the shortcomings of the database module in *ClarisWorks 4* when mail merging. I've also found another flaw: the word processor will not allow you to assign a suitable symbol for a footnote, unlike version 2. Okay, the world isn't going to end, but this does mean that the package lacks the flexibility of previous versions.

Another thing I am not too keen on is the on-line manual. It seems to take me a lot longer to get any information out of it than when I used the beautifully written book that accompanied version 2. Even William Gibson (Mr Cyberpunk himself) acknowledged (in a *Mail on Sunday* interview) the superiority of the book as a medium for the written word. This seems to be technology for its own sake rather than fulfilling a need in a better way.

I hope Claris will take these criticisms in the spirit that they were intended. There are of course positive aspects of *Works 4:* the writing tools section of the word processor is very good, the different modules of the package are seamlessly integrated, and finally it doesn't picture Bill Gates on the packaging.

Ged Carroll
Bebington, Wirral
via FutureNet

Er, moving swiftly on...

Software for a Plus?

HELP WANTED

I have for some time been very interested in the Mac system, and was lucky enough to have one of the first Macs given to me, a Mac Plus – no hard drive and 800K floppy disk drive. My question to anyone is where can I get the original software, or even software that will run on the Mac Plus?

Apple was very good and managed to find me a copy of the original handbook, but apart from that, doesn't seem to be able to help other than telling me that I can upgrade the OS to 6.5. They have promised to send me

THE GREAT 'PORN' DEBATE, CONTINUED...

In MACFORMAT 32, reader Tony Wighton complained about the inclusion of 'porn' on our Cover CD in the form of a strip-poker game called Strip-Mac. *We invited response, and it continues to flood in....*

I am another who will cancel his subscription if 'schoolboy smut' (apt phrase, Cyril Elliman) is promoted in MACFORMAT.

Proponents of the old fallacy 'my harmless bit of fun is nobody else's business' do not yet realise that 'no man is an island'. What I do and say, whether publicly or in (imagined) privacy, does contribute to the forming of community consensus, because I am a unit in constant interaction with others. What I am, inside, cannot fail to affect my response to others. What I do 'in privacy' cannot fail to mould the nature of what I am.

Rob Bailey asserts, astonishingly, that 'one cannot "advocate" promiscuity – people are either promiscuous or not'. Has he not yet noticed that people are not static or autonomous, but they grow – and decay also (sometimes prematurely)?

How many more corrupted children, copycat perverted murders and the like must our community absorb before we see this, and face up to our *community* responsibility to enforce minimum standards of morality?

Micheál Ó Fearghail
Cork City, Ireland

And for the defence...

I've been reading MACFORMAT regularly for about a year, and I keep getting bugged by the petty-mindedness of some people writing to you. First there was (as I recall) *Wolfenstein* being anti-German, where the real meaning was a *computer* game with a lot of violence just like *Doom.* It's meaningless violence but fun when it's on a monitor. Now there's *Strip-Mac* being repulsive because it's dealing with sex in another way.

We are also Christians in Denmark but still we've got porno magazines in ordinary stores. We've got *Doom* (with a 15 certificate, but it's only a recommended age). Still, the world likes us, our children grow up and become ordinary law-abiding citizens, and we all (well almost) live merrily.

I tried *Strip-Mac* (alone) and read some of the cards, I quitted it again and I've never touched it since and I'm still the same person.

Jan Jonasen
Silkeborg, Denmark
via FutureNet

this but as yet it has not turned up.

I could install an external hard disk drive, but getting one second-hand is almost impossible, and buying one would be more than the machine's worth, although I would be able to use it on another Mac, I suppose.

There must be a shop somewhere in the world that specialises in this wonderful little machine. I don't have a modem for it, so I'm looking to have disks (800K) sent to me. I have a modem on my PC , but I get the impression that transferring from a PC to a Mac is beset with problems.

Could there be a specialist magazine out there that deals with the Plus?

Steve Scaysbrook
via CIX

Can anyone help? No, seriously. Before you scoff, read this letter again: we have here a PC owner who thinks a humble Mac Plus is a 'wonderful little machine'. The least we can do is welcome him into the fold. For our part, we explained how to transfer text files from other platforms to Macs, and how to handle those files' formats, in MACFORMAT *34 and 35. Watch for how-to's dealing with non-text files soon.*

Time, gentlemen, please

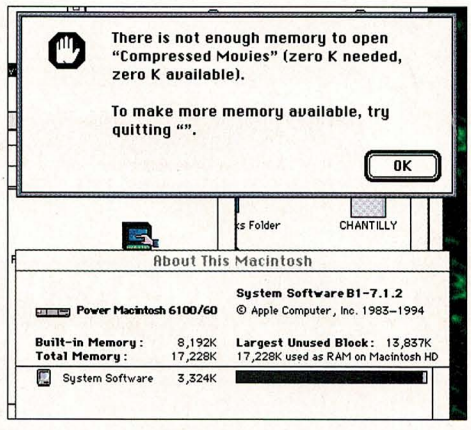
SPOT ON?

Has anybody thought of a way to fit Macs with a receiver to detect the time signal transmitted by the National Physical Laboratory in Rugby? The benefits of time accuracy of one second in a million years may appeal to a significant number of Mac owners, especially in view of the growth of interest in computer-driven astronomy. The existing built-in clock in my machine gains rapidly and requires much effort just to get it vaguely accurate, never spot on.

On a different tack... If the Internet had been designed by Apple, would the addresses look so dotty and nerdish? Is it too late for user-friendliness on the information superhighway's gateposts? Or is there a rich prize ahead somewhere for one who can bring it a human face?

Charles Barrand
Cheltenham, Glos.

Ironic, isn't it, that a £2,000 computer keeps worse time than a £1 watch. But surely there's a simpler solution – fitting one of the aforementioned watches into said computer? As for the human face of the Internet, wasn't that what Apple tried with eWorld – a brave experiment that (as we report in this issue's News) has now failed? Could it be that 'Net nerds' like *it nerdish?*


There is not enough memory to open "Compressed Movies" (zero K needed, zero K available).
To make more memory available, try quitting "".
OK
CHANTILLY
About This Macintosh
System Software B1-7.1.2
Power Macintosh 6100/60
© Apple Computer, Inc. 1983–1994
Built-in Memory : 8,192K
Total Memory : 17,228K
Largest Unused Block : 13,837K
17,228K used as RAM on Macintosh HD
System Software 3,324K

More Silly Things Your Mac Says – silly and, as it happens, wrong too, as the **About This Macintosh** box proves. Maybe 'There's not enough memory' is simply your Mac's catch-all code term for 'Can't do it, don't know why'. Joolz Williams of Sheffield wins a binder and our sympathies for this one. Has your Mac given you a silly message? Grab it by hitting **[command] [shift] 3** and send it in to us!

Two more MACFORMAT binder winners. First, for our upgrade issue, 'looking for some RAM' from Andrew Long of Newport, Gwent. Above: 20 years of Apple? That's nothing, according to this card from Reidar Hallqvist of Malmö, Sweden. In fact, didn't they leave a Hasselblad on the moon? Waste of a perfectly good camera... Or, if anyone from Hasselblad is reading, a waste of an absolutely *superb* camera, which would be much better wasted – er, *used* by being given to, oh, say, the editor of Britain's best-selling Mac magazine. And if anyone from Apple is reading... Well, anyway: whenever you write to MACFORMAT or enter a competition, an eye-catching postcard could win *you* a binder.

System 8 wish list

GREAT IDEAS, NUMBER 749

I would really like to see an addition in System 8.0 (MacOS 1.0?) that enables a user to alter an alias's size preference. This would make it possible to have a few aliases on the Desktop that load the same program but with a different set of RAM prefs. It would also allow users to alter the memory settings of a program on CD-ROM.

As a programmer I can see that it is very possible. Just add a SIZE resource to the alias and make sure the Processes Manager looks at the alias first, instead of just ignoring it.

Graham Miln
Leominster
via FutureNet

Any more suggestions for System 8? **MF**

HOW TO GET IN TOUCH WITH MACFORMAT

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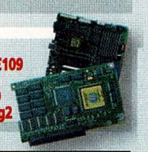

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THE GH Charter

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Whilst our standard warranty cover is comprehensive, we also offer enhanced and extended warranties too. If your Mac is an essential part of your business, you may require a fast collection or on-site response service for minimal down time. Ask for details and choose the option that suits your needs best. Our 'Gold Service' is priced from as little as £10!

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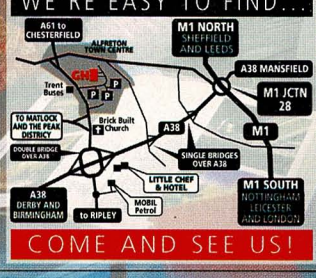

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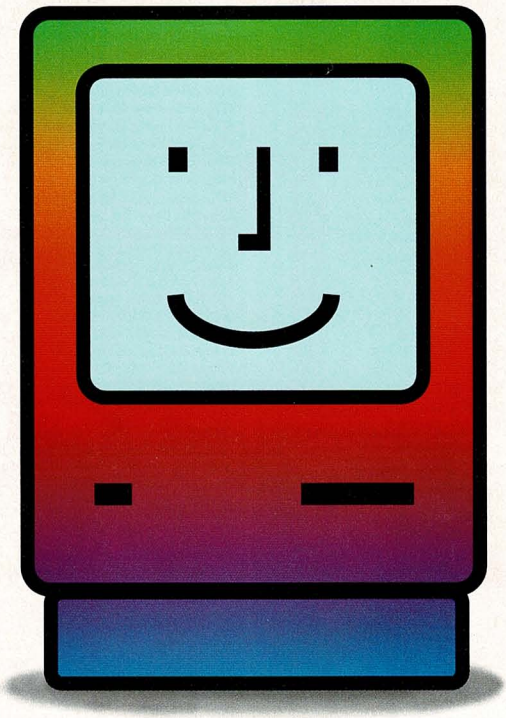

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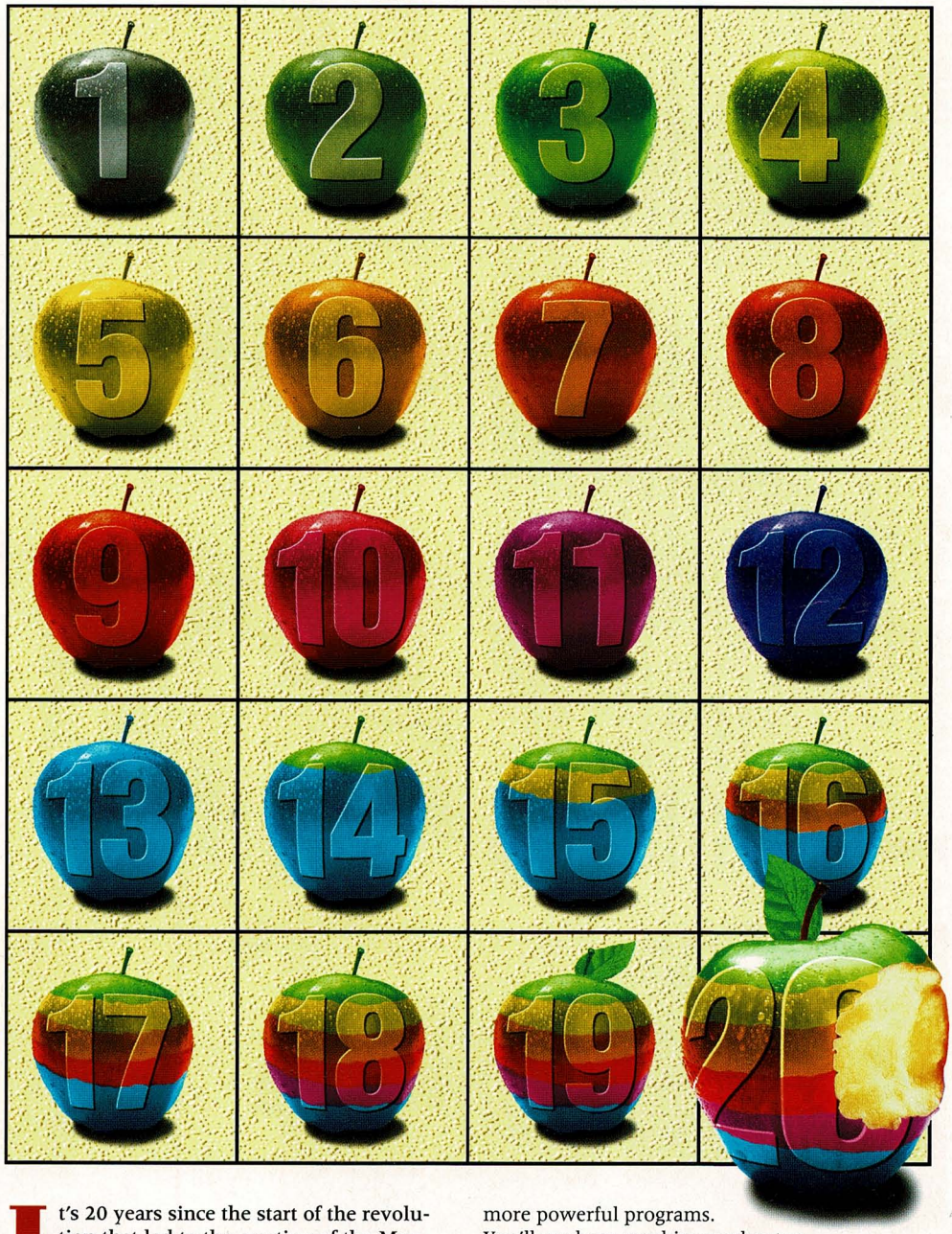
Twenty golden years

MACFORMAT celebrates two decades of the world's favourite computer company with a tribute to Apple, plus a giant guide to taking your Mac into the future.



It's 20 years since the start of the revolution that led to the creation of the Mac. Apple Computer started in a garage but is now one of the largest computer companies in the world – and the one that has changed the computer the most in 20 years, with machines like the Apple II and the Mac.

We're celebrating this landmark occasion with an in-depth look at the Mac and the people who made it a reality. We'll show you the equipment you need to make your Mac feel thoroughly modern, whatever its age. You'll discover how upgrades like extra memory, extra video RAM and disk caches can enable your Mac to run more powerful programs.

You'll see how graphics accelerators and clock chipping kits can break your Mac's speed limit, and how processor upgrade cards can turn it into a faster model – even a PowerMac. Our interactive CD-ROM guide takes you on a tour of your Mac's insides, and shows you how to install basic items of hardware.

You'll also get the inside track on Apple's plans to spread the Mac word in '96, and walk down Memory Lane for the story of Apple since 1976. But first, turn the page for our giant family tree. Where does your Mac fit in the development of the computer that changed the world?

Continued on next page

The Macintosh family tree

It took Apple over seven years to get around to producing the machine for which it is best known. But once it hit its stride, the Macintosh irrevocably transformed the world of computing.

Innovation was Apple's middle name right from the start. Its first commercial computer, the Apple II, was released in June 1977 at just $1,298 – astonishingly affordable, considering that 'real' computers at the time filled a large room and could be expected to cost tens of thousands of dollars. The Apple II boasted 4K of RAM, could generate colour graphics on your TV screen, and sold in its thousands. The Apple III followed in September 1980, costing $3,495. Then in January 1983 came the groundbreaking Lisa. It had 512K of RAM, a graphic interface and a novel control device called a mouse. It cost a hefty $9,995, but it was the first Mac-like computer (so much so that two years later it was renamed the Macintosh XL). Its descendants changed the world.

And here they are, in all their glory. The release dates given are official 'worldwide' dates (which will be US rather than UK dates for earlier models). Prices – and in many cases specifications – may have altered many times in the course of a model's lifetime; we quote original 'list' prices (of base models if there are variants) and basic specs.

Compact Macs The original 'all-in-one-case' design, with integral (but small) monitor.

Mac II series The first 'modular' Macs, designed to be flexible and upgradable.

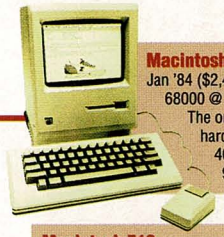
LCs/Performas Macs specifically designed for home users. Affordable, if not cutting-edge.

Quadra/Centris series Modular, professional Macs based on the most powerful 68K processor.

PowerMacs The new generation of RISC Macs. The fastest desktop computers ever.

1984

January



Macintosh 128
Jan '84 ($2,495) – Oct '85
68000 @ 8MHz
The original Mac. No expansion, no hard disk, no SCSI port, single 400K floppy drive, built-in B&W 9-inch screen.

September

Macintosh 512
Sept '84 ($3,195) – Apr '86
68000 @ 8MHz
The 'Fat Mac'. Identical to the 128 except this has a whopping half-meg of RAM.

1985

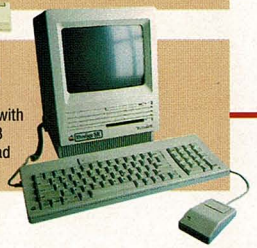
1986

January

Macintosh Plus
Jan '86 ($2,599) – Oct '90
68000 @ 8MHz
Still no hard disk, but 800K floppy drive and SCSI port. Price cut to $1,799 in March '87.

1987

March



Mac SE
Mar '87 ($2,898) – Oct '90
68000 @ 8MHz
The first expandable Mac, with optional hard disk and ADB port. Some later models had a 1.4Mb floppy drive.

Mac II
Mar '87 ($3,898) – Jan '90
68020 @ 16MHz
Hugely expandable, though oddly enough you needed to buy a video card to connect it to a monitor!

1988

October

Mac IIx
Oct '88 ($7,769) – Oct '90
68030 @ 16MHz
First modular Mac to use the 68030 processor. Six NuBus slots plus FPU.

1989

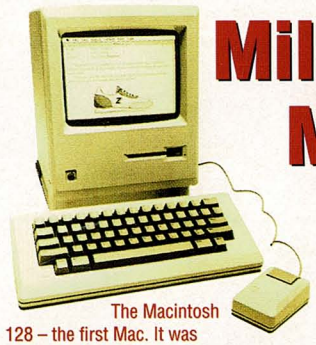
January

Mac SE/30
Jan '89 ($4,369) – Oct '90
68030 @ 16MHz
First Mac with an FPU, 1.4Mb floppy disk drive, and 32-bit colour QuickDraw so you could connect an external monitor via an expansion card.

Mac IIcx
Mar '89 ($5,369) – Mar '91
68030 @ 16MHz
Designed to be easily assembled – to prove it, then Apple president Jean-Louis Gassée assembled one from scratch at a press conference in around a minute.

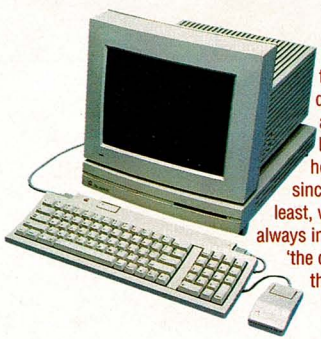
March

Milestone Macs

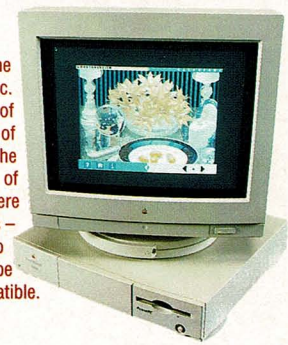


The Macintosh 128 – the first Mac. It was underpowered (Apple cut corners to keep the cost down) but it started a revolution.

The Mac II. The first modular Mac, with *six* NuBus expansion slots. In 1988, with 4Mb of RAM it cost a princely $7,769 (monitor not included).



The LC was the first Mac designed to appeal to the burgeoning home market – since the 128, at least, which was always intended to be 'the computer for the rest of us'.



The 6100, the first PowerMac. Like many of Apple's leaps of innovation, the original series of PowerMacs were compromises – less radical so they could be more compatible.

1990

September

Mac IIci
Sep '89 ($6,269) – Feb '93
68030 @ 25MHz
First modular Mac with built-in 256-colour monitor support.

March

Mac IIfx
Mar '90 ($5,610) – Apr '92
68030 @ 40MHz
Wickedly fast – the choice of serious graphics users.

October

Classic
Oct '90 (£895) – Oct '91
68000 @ 8MHz
First *affordable* Mac. Also the only Mac to have a built-in ROM disk you can start up from: hold down [command] [option] [O] [X] on startup.

Mac IIsi
Oct '90 (£2,295) – Mar '93
68030 @ 20MHz
First Mac with sound input port and microphone. Not very expandable – only one combined NuBus/PDS slot.

Macs, Performas or Quadras?

Some Mac models were sold to business buyers as LCs but to home buyers as Performas (with bundled software). The hardware was identical (apart perhaps from the badge on the front of the case). Some other Macs were basically the same machines but with minor differences. The most important of these two classes of models were as follows:

Performa 200	**Classic II**	
Performa 400	**LC II**	
Performa 450	**LC III**	
Performa 475	**LC 475**	**Quadra 605**
Performa 600	**IIvx (minus cache & FPU)**	
Performa 630	**LC 630**	**Quadra 630 (with FPU)**

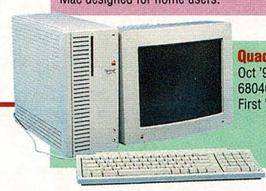
November

Mac LC
Nov '90 (£1,235) – Mar '92
68020 @ 16MHz
First really affordable, colour-capable modular Mac designed for home users.

1991

October

Classic II
Oct '91 (£1,145) – Sept '93
68030 @ 16MHz
First Mac with a microphone port, and last B&W compact Mac. AKA Performa 200.



Quadra 700
Oct '91 (£4,695) – Mar '93
68040 @ 25MHz
First '040-based Mac.

Quadra 900
Oct '91 (£5,395) – May '92
68040 @ 25MHz
RAM expandable up to a whopping 256Mb. Replaced by 33MHz Quadra 950.

1992

March

Mac LC II
Mar '92 (£1,235) – Mar '93
68030 @ 16MHz
Best selling Mac of 1992, but hardly faster than LC. Apple upgraded the processor but kept the 16-bit data bus, slowing the computer down again. AKA Performa 400.

October

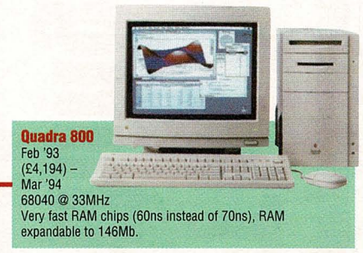
Mac IIvx
Oct '92 (£2,225) – Oct '93
68030 @ 32MHz
First Mac with an optional built-in CD-ROM drive. AKA Performa 600. IIvi was identical but ran at half the clock speed.

1993

February

Colour Classic
Feb '93 (£911) – May '94
68030 @ 16MHz
First colour compact Mac. Also first Mac you could switch on/off from keyboard. VRAM expandable to 512K.

Mac LC III
Feb '93 (£1,245) – Feb '94
68030 @ 25MHz
Twice as fast as the LC II. AKA Performa 450.



Quadra 800
Feb '93 (£4,194) – Mar '94
68040 @ 33MHz
Very fast RAM chips (60ns instead of 70ns), RAM expandable to 146Mb.

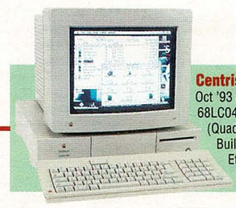
August

Quadra 840AV
Aug '93 (£3,819) – July '94
68040 @ 40MHz
16-bit stereo playback and record, built-in 24-bit video. 60MHz DSP (Digital Signal Processor). Composite and S-Video input and output. Fastest non-PowerPC Mac ever.

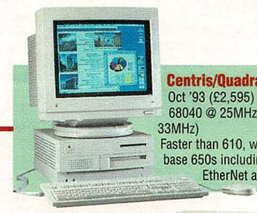
1994

October

Performa 475
Oct '93 (£967) – Apr '95
68LC040 @ 25MHz
Much faster than the LC III it replaced. AKA LC475, Quadra 605.



Centris/Quadra 610
Oct '93 (£1,745) – May '94
68LC040 @ 20MHz (Quadra 25MHz)
Built-in video and EtherNet. Quadra version has FPU.



Centris/Quadra 650
Oct '93 (£2,595) – Sep '94
68040 @ 25MHz (Quadra 33MHz)
Faster than 610, with all but the base 650s including FPU and EtherNet as standard.

Centris/Quadra 660AV
Oct '93 (£2,291) – Sep '94
68040 @ 25MHz
16-bit stereo playback and record, built-in 16-bit video. 55MHz DSP (Digital Signal Processor). Composite and S-Video input and output.

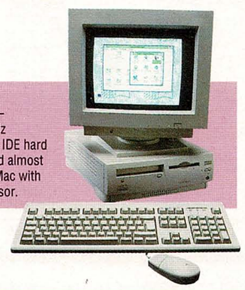
March

6100/60
Mar '94 (£1,526) – Jun '95
PowerPC 601 @ 60MHz
First PPC Mac. Combined NuBus/PDS slot. Available with DOS card.

7100/66
Mar '94 (£2,466) – Jun '95
PowerPC 601 @ 66MHz
Probably the best value PowerMac – same expandability as 8100.

8100/80
Mar '94 (£4,816) – Jun '95
PowerPC 601 @ 80MHz
Top of original PowerMac range.

July



Performa 630
July '94 (£1,234) – 68LC040 @ 33MHz
The first Mac with IDE hard disk, not SCSI, and almost certainly the last Mac with 68K series processor.

1995

June

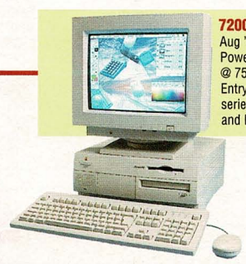
9500/120
Jun '95 (£4,695) – PowerPC 604 @ 120MHz
Top of new PowerMac range, with PCI sockets and DIMMs, expandable up to 768Mb. 132MHz version (£5,816) fastest Apple machine ever.

July

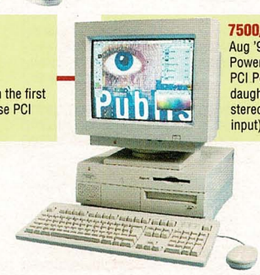
Performa 5200
July '95 (£1,474) – PowerPC 603 @ 75MHz
First of new generation all-in-one PowerMacs. Quad-speed CD-ROM drive and multisync monitor built-in; TV tuner card optional.

Performa 6200
July '95 (£1,374) – PowerPC 603 @ 75MHz
Same specs as 5200 but in more usual modular casing.

August



7200/75
Aug '95 (£1,240) – PowerPC 601 @ 75 or 90MHz
Entry-level model in the first series of Macs to use PCI and DIMMs.



7500/100
Aug '95 (£2,144) – PowerPC 601 @ 100MHz
PCI PowerMac with processor daughterboard and AV abilities (16-bit stereo sound; composite and S-Video input). RAM expandable to 512Mb.

8500/120
Aug '95 (£4,147) – PowerPC 604 @ 120MHz
As 7500 but with 604 chip. Professional-level PCI PowerMac with processor daughterboard and AV capabilities.

October

Performa 5300
Oct '95 (£2,429) – PowerPC 603e @ 100MHz
In 5200 casing, but with improved chip, TV tuner card, MPEG video card and built-in modem.

1996

DESKTOP MACS

How expandable is your Mac? Whether you want to add RAM, an FPU (maths co-processor) or an expansion card, this handy table sets out what each model can accept. For details of upgrades available, even replacement main processors, see page 56.

Model	Processor	Speed	RAM / Max RAM	Expansion	FPU
Compact Macs					
Mac 128K	68000	8MHz	128K not exp	None	No
Mac 512K	68000	8MHz	512K not exp	None	No
Mac Plus	68000	8MHz	1Mb exp to 4Mb	None	No
Mac SE	68000	8MHz	1Mb exp to 4Mb	1 PDS	No
Mac Classic	68000	8MHz	1Mb exp to 4Mb	None	No
Mac SE/30	68030	16MHz	1Mb exp to 128Mb	1 PDS	Yes
Mac Classic II	68030	16MHz	2Mb exp to 10Mb	None	Optional
Mac Color Classic	68030	16MHz	2Mb exp to 10Mb	1 LC-PDS	Optional
Mac II series					
Mac II	68020	16MHz	1Mb exp to 68Mb	6 NuBus	Yes
Mac IIx	68030	16MHz	1Mb exp to 128Mb	6 NuBus	Yes
Mac IIcx	68030	16MHz	1Mb exp to 128Mb	3 NuBus	Yes
Mac IIci	68030	25MHz	1Mb exp to 128Mb	3 NuBus	Yes
Mac IIfx	68030	40MHz	1Mb exp to 128Mb	6 NuBus, 1 PDS	Yes
Mac IIsi	68030	20MHz	1Mb exp to 65Mb	1 NuBus/PDS‡	Optional
Mac IIvx	68030	32MHz	4Mb exp to 68Mb	3 NuBus	Yes
Mac IIvi	68030	16MHz	4Mb exp to 68Mb	3 NuBus	Optional
LCs and Performas					
Mac LC	68020	16MHz	2Mb exp to 10Mb	1 LC-PDS	Optional
Mac LC II	68030	16MHz	4Mb exp to 10Mb	1 LC-PDS	Third-party
Mac LC III	68030	25MHz	4Mb exp to 36Mb	1 LC-PDS	Optional
Performa 475	68LC040	25MHz	4Mb exp to 36Mb	1 LC-PDS	Upgrade
Performa 630	68LC040	33MHz	4Mb exp to 36Mb	1 LC-PDS	Upgrade

* PD – Processor Daughterboard † PDS slot in 7100 and 8100 series Macs taken up by a video card ‡ The expansion slot in some Macs is a combined single NuBus and PDS slot. Normally, an adaptor is required for use with these.
Processor upgrades are available for some Macs that do not have FPUs. Usually, this means a whole new processor.
Note: The PDS slots are not the same in all Macs – in fact, few Macs share the same slot. Check with the dealer which one fits your Mac.

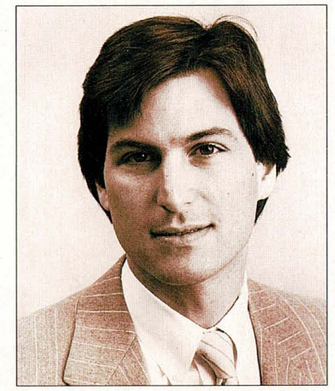
PORTABLES

Model	Processor	Speed	Colour	Introduced	Discontinued
Quadra/Centris series					
Centris 610	68LC040	20MHz	B&W	September 1989	February 1991
Quadra 610	68040	25MHz	B&W	October 1991	July 1992
Centris 650	68040	25MHz	B&W	October 1991	August 1992
Quadra 660AV	68040	33MHz	B&W	October 1991	October 1992
Quadra 700	68040	25MHz	B&W	August 1992	June 1993
Quadra 800	68040	33MHz	B&W	October 1992	August 1993
Quadra 840AV	68040	40MHz	4 greys	October 1992	May 1994
Quadra 900	68040	25MHz	16 greys	February 1993	December 1993
Quadra 950	68040	33MHz	256 colours	June 1993	July 1994
Power Macintosh			B&W	June 1993	March 1994
PowerMac 6100/60	PowerPC 601	60MHz	256 colours	August 1993	July 1994
PowerMac 6100/66	PowerPC 601	66MHz	B&W	May 1994	June 1995
PowerMac 7100/66	PowerPC 601	66MHz	16 greys	May 1994	
PowerMac 7100/80	PowerPC 601	80MHz	256 colours	May 1994	October 1994
PowerMac 7200/75	PowerPC 601	75MHz	64 greys	May 1994	
PowerMac 7200/90	PowerPC 601	90MHz	Thousands	July 1994	
PowerMac 7500/100	PowerPC 601	100MHz	4 greys	August 1995	
PowerMac 8100/80	PowerPC 601	80MHz	16 greys	August 1995	
PowerMac 8100/100	PowerPC 601	100MHz	256 colours	August 1995	
PowerMac 8100/110	PowerPC 601	110MHz	Thousands	August 1995	
PowerMac 8500/120	PowerPC 604	120MHz	Thousands	August 1995	
PowerMac 9500/120	PowerPC 604	120MHz	Thousands	August 1995	
PowerMac 9500/132	PowerPC 604	132MHz	Thousands	August 1995	
Performa 5200	PowerPC 603e	75MHz	256 colours	August 1995	
Performa 5300	PowerPC 603e	100MHz			
Performa 6200	PowerPC 603e	75MHz			

Model	Processor	Speed	RAM / Max RAM	Expansion
Macintosh Portable	68000	16MHz	2Mb exp to 9Mb	Modem slot
PowerBook 100	68000	16MHz	4Mb exp to 8Mb	Modem slot
PowerBook 140	68030	16MHz	4Mb exp to 8Mb	Modem slot
PowerBook 170	68030	25MHz	4Mb exp to 8Mb	Modem slot
PowerBook 145	68030	25MHz	4Mb exp to 8Mb	Modem slot
PowerBook 160	68030	25MHz	4Mb exp to 14Mb	Modem slot
PowerBook 180	68030	33MHz	4Mb exp to 14Mb	Modem slot
PowerBook 165c	68030	33MHz	4Mb exp to 14Mb	Modem slot
PowerBook 145b	68030	25MHz	4Mb exp to 8Mb	Modem slot
PowerBook 180c	68030	33MHz	4Mb exp to 14Mb	Modem slot
PowerBook 165	68030	33MHz	4Mb exp to 14Mb	Modem slot
PowerBook 520	68LC040	25MHz	4Mb exp to 36Mb	Modem slot
PowerBook 520c	68LC040	25MHz	4Mb exp to 36Mb	Modem slot
PowerBook 540	68LC040	33MHz	4Mb exp to 36Mb	Modem slot
PowerBook 540c	68LC040	33MHz	4Mb exp to 36Mb	Modem slot
PowerBook 150	68030	33MHz	4Mb exp to 40Mb	Modem slot
PowerBook 190/66	68LC040	33MHz	8Mb exp to 40Mb	2 PC card
PowerBook 190cs/66	68LC040	33MHz	8Mb exp to 40Mb	2 PC card
PowerBook 5300/100	PPC 603e	100MHz	8Mb exp to 56Mb	2 PC card
PowerBook 5300c/100	PPC 603e	100MHz	8Mb exp to 64Mb	2 PC card
PowerBook 5300ce/100	PPC 603e	100MHz	8Mb exp to 64Mb	2 PC card
PowerBook 5300cs/100	PPC 603e	100MHz	8Mb exp to 64Mb	2 PC card
Duos				
PowerBook Duo 210	68030	25MHz	4Mb exp to 32Mb	Modem slot
PowerBook Duo 230	68030	33MHz	4Mb exp to 32Mb	Modem slot
PowerBook Duo 250	68030	33MHz	4Mb exp to 32Mb	Modem slot
PowerBook Duo 270c	68030	33MHz	4Mb exp to 32Mb	Modem slot
PowerBook Duo 280	68LC040	33MHz	4Mb exp to 40Mb	Modem slot
PowerBook Duo 280c	68LC040	33MHz	4Mb exp to 40Mb	Modem slot
PowerBook Duo 2300c/100	PPC 603e	100MHz	8Mb exp to 56Mb	Modem slot
Duo Docking Stations				
PowerBook Duo MiniDock	–	–	–	None
PowerBook Duo Dock	–	–	–	2 NuBus
PowerBook Duo Dock II	–	–	–	2 NuBus
PowerBook Duo Dock Plus	–	–	–	2 NuBus

The more things change...

Apple has never stood still. As it celebrates its 20th anniversary of change, Richard Hill looks at its history, in search of the ideals that have remained constant.



Steve Jobs was one of the pair that started Apple, the company that transformed the computer.

THE APPLE RANGE

The Apple I, 1976-77; the Apple II, 1977-93; the Apple III, 1980-84; Lisa, 1983-85; Macintosh, 1984-96? And the Power Macintosh, 1994 to who knows when?

WHERE WERE YOU?

What's your fondest memory of an Apple computer? What's the most dramatic effect your Mac has had on your life? We'd love to hear your Apple stories – write to Memory Lane, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW.

There's upheaval at Apple. The company behind the Mac is achieving its best sales figures ever, but is dangerously overstocked with machines after a poor Christmas. Apple's President warns of 'extremely challenging times' ahead.

Don't be fooled into thinking you've just read an excerpt from a recent MACFORMAT news page; this is a snapshot of Apple aged nine, in 1985. The whole 20-year tale of Apple is an exhilarating ride of exceptional highs and distressing lows – often both at once. You can't say it's been boring...

Revisiting the past

If you want to know what makes Apple tick, it's the glorious clash between the differing backgrounds of its founders, Steve Wozniak and Steve Jobs. Wozniak was working at business titan Hewlett-Packard, a world-renowned maker of calculators; Jobs was at Atari, the 1970s king of the games arcade. The two Steves came together to exploit a new development in technology – a computer so small and cheap that it was possible for an individual to own it. But Apple was not interested in pursuing just the businessman or just the enthusiast playing games and tinkering with circuit boards. It embraced everyone.

In 1976, their Apple I computer joined the swelling ranks of computers being sold to technology enthusiasts in the United States. The new company grew quickly, as did its competitors. It was soon obvious that the personal computer could be more than another dead end. And Apple learned quickly from its Apple I customers exactly what it should do to make the most of the opportunity.

Jobs and Wozniak had help in expanding the company from 'Mike' Markkula, who has outlasted his contemporaries to remain a potent presence at Apple ever since. Marketing plans were developed, and the now instantly recognisable rainbow logo was designed. Markkula's business knowledge got Apple the funding it needed to launch the Apple II in 1977.

The Apple II had 4K of RAM, was controlled by programs you loaded from a cassette player, plugged into your TV and set you back $1,298 (about £840 at today's exchange rates). But it was the machine that changed everything. It brought the computer into the view of the general public, and it ended the DIY ethic. If you bought a computer back in 1977, you usually had to be prepared to break out the programming manuals and write your own software in languages like BASIC and assembly code. But *VisiCalc*, an accounts program, made its writers enough money to prove that it was time to put software development on a more professional footing. The time of fans writing for other fans was gone.

The personal computer industry exploded over the following years, with corporate giants like IBM waking up to the phenomenon and powerful new devices like the hard drive making computing less stressful. Apple thrived, but Jobs and Wozniak still had their sights set on their original goal: to make computing easy and accessible for all. And in 1983, they introduced the computer that really started Apple on the path to achieving the dream.

Lisa was its name. Apple's new machine made everyone who already used a computer gasp for breath. It brought science fiction ideas of computing out of the research laboratory and to a position where everyone could see them and marvel.

Shaping our present

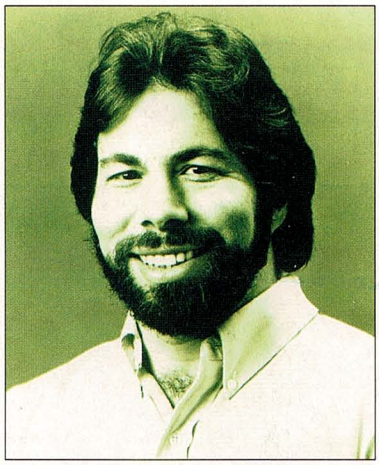
Lisa abandoned the traditional computer control system of typing text onto a black screen. Instead you had an entire office on your screen – tools, filing cabinets and documents, with graphic representations of each. You manipulated these icons using a mouse – a small box with a rolling ball underneath. Moving the mouse moved an arrow-shaped cursor on the screen until it was above the icon you wanted – then you just clicked the mouse button. To think this was revolutionary just 13 years ago...

Lisa went further, expanding its desktop metaphor by providing the basic tools you'd need with the machine when you bought it, rather than leaving you to fend for yourself. *LisaWrite*, *LisaDraw* and *LisaCalc* were part of an entire virtual office.

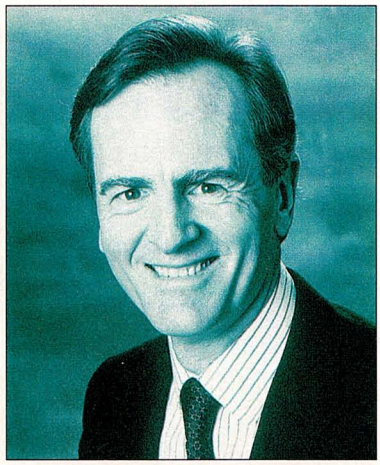
But while Lisa attracted a huge amount of interest, there was a price to pay if you wanted to join the revolution: $9,995 (£6,450) to be precise. Despite its attractions, there was no way many people were going to risk that amount of money on an untried concept. But there were rumours of a second machine, one that took the basic Lisa concepts and made them

THE DAY THE MAC WAS BORN...

Viewers enjoying the 1984 Super Bowl on TV were suddenly blasted into a new era, when Apple announced the Mac in a blaze of dystopian glory. An incongruous-looking freedom fighter bearing the Mac logo bursts into a scene straight out of the Orwell novel *1984*, destroying blank conformity (other computers) with a hammer blow of individuality (the Mac).



Steve Wozniak founded the company with Jobs. He now prefers to concentrate on teaching.



John Sculley, now at Live Picture, saw Apple through some of its most challenging times.

more accessible – if not as powerful. The name that was whispered in the shadows was Macintosh.

Macintosh blasted out of obscurity in January 1984 in a manner people still talk about – usually with a hint of 'Why can't they do ads like that anymore?' During one entire commercial break of the Super Bowl, the climax of the American football season and traditionally the biggest TV audience-puller of the year, Apple ran an advert that made sure everyone who saw it wanted to know about Macintosh. It followed up with huge campaigns in magazines. At $2,495 for a 128K machine, no one seemed to care if it was less powerful than Lisa. By November, Apple was confident enough in its new baby to offer free home trials of the Mac to 200,000 people.

Above all the hype, it was the knock-on effect of the Mac's new, detailed graphical display that made it a success. Pictures were made into digital forms that could be displayed on the screen, and altered. The same was true of type – you could have different typeface designs. New printing technology meant these shapes, basically arrangements of black dots, could be printed out with an acceptable amount of detail. And *PageMaker* was the first program to take advantage of these benefits, enabling you to create your own arrangements of text and images on the page. The publishing industry, which until that point had relied on outmoded ideas and inflexible typesetters, couldn't believe its luck.

It was at this point – in 1985 – that the aforementioned 'challenging times' arrived, with Apple failing to predict demand accurately enough to avoid making a loss. New boss John Sculley was forced into making job cuts, and Wozniak and Jobs left for new challenges within a few months of each other. Lisa was quietly dropped, leaving only the Mac and the still-popular Apple II. The company also faced a serious challenge from the new PC, with IBM's lack of foresight leading to Microsoft and Intel kick-starting a fresh, liberal market for computers based on the IBM design.

Tough times called for some fast growing-up on Apple's part. It remade itself, changing the way it did business, making the most of newly-established strongholds in publishing and education. Apple Centres – opening in the UK at this time – appealed to specialist business customers.

The use of digital technology grew, extending to devices like scanners, which enabled you to convert hand-drawn illustrations to computerised formats, and new ways of storing information with the first CD-ROM drives. Computers became less remote – you could use them as you used other tools rather than having to adapt to their specific way of doing things. *HyperCard*, introduced in 1988, revived the DIY past of the Apple II with the twist that creating your own simple programs and presentations was easy. It created the idea of the computer as medium as well as tool, a way of receiving information as you would from the TV or a newspaper.

But the world was changing more quickly than Apple now, and it remained to be seen if Apple could catch up. It was being outpaced by a horde of firms selling an inferior product – the PC-compatible computer running Windows – reaching huge new audiences that Apple wasn't addressing.

Preparing for the future

You could argue forever about where Apple lost its way. Perhaps it was wrong to keep its Mac operating system to itself, refusing others permission to make computers based on its designs. Or maybe it lost its common touch, and made the mistake of restricting itself to niche areas like publishing in the process? But whatever its mistakes, the 1990s have so far told the epic tale of Apple righting wrongs and getting ready for more glorious times ahead.

The Mac itself has become more accessible still, with developments like System 7 – the most perfect operating system yet devised – and QuickTime, a bold new step in the continuing use of digital technology that gives us all control over media, making it easier to communicate.

Apple has also caught up with the new demands of the public, introducing the Performa – the simplest home computer you can get. And, most significantly, the 1991 alliance with IBM and Motorola has led to the Power Macintosh, which is now just over two years old. With the old Mac design reaching physical speed limitations, the PowerMac has the power and flexibility to take Apple's ideas into the next century.

So after 20 years of imagining, building and creating, what are those ideas that Apple still holds? What lies at the core of the dream that was born on April Fool's Day, 1976? The mission was – and remains – communication. Using the best technology available to set you free on whatever path you want to travel.

You could speculate forever about what might have happened if Apple hadn't been formed; about whether the computer would still be a room-sized monolith that only a physicist could love. Chances are that some other company would have come along and shown us the way to the freedom the Mac gives us, but it was Apple that did it. That's why it attracts the attention, and even devotion, of so many people today.

WHERE ARE THEY NOW?

Steve Jobs now owns 80% of computer firm Pixar, the technical wizards behind the recently released Disney film *Toy Story*, which grossed over $177 million at the US box office.

Steve Wozniak is currently teaching maths in Los Gatos, California. You can watch him in action on the WozCam – get to it via his home page at **http://www.woz.org/pages/staff/steve/steve/.html**

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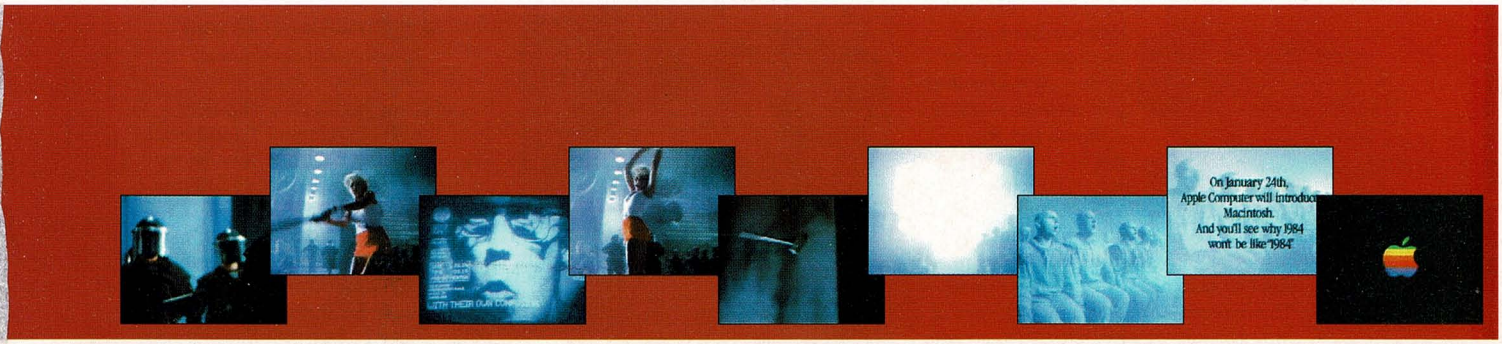


Where next for Apple?

The future's looking exciting, yet uncertain, as Apple moves into its third decade. Apple Europe's president Marco Landi tells Richard Hill what he sees ahead.

THE MACFORMAT INTERVIEW

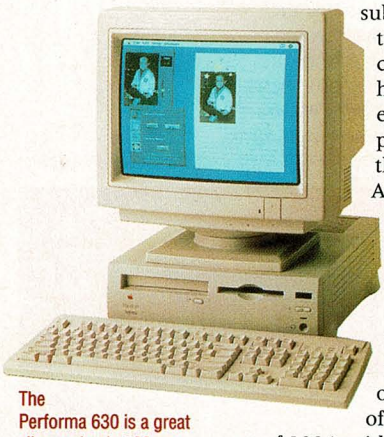
Marco Landi makes it all sound so simple. As the head of Apple in Europe, he's one of the people responsible for setting the course for the Mac – and he has big plans for the rest of 1996.

His powerful personality reflects his experience within huge firms like Texas Instruments, where he developed his direct style of doing business. Now he's using the pragmatic approach he's developed to build on the success of the most creative product in the computer world – the Mac – as Apple takes stock, and plans for the future.

Machines like Bandai's Atmark Player are set to make a big impact as the Net becomes more popular.

Looking back at the last 20 years in the computer industry, Landi observes that back then, one design of computer was supposed to meet all needs, whether you were a serious businessman or you dabbled with software at home. 'It's not monolithic any more,' he says, 'but unfortunately at Apple we have kept products that we have been selling to different markets – think of the Performa 630. This is not the thing that we want to continue to do.'

Landi believes that nowadays people looking for a computer choose something that closely suits their requirements, and that a successful computer firm needs to address this in obvious ways, like offering different setups of processor speed and hard drive space, and in more subtle ways – like the type of software you can buy. 'You need to have a focused strategy, differentiating products for each of the market segments. And then, a very well-differentiated communication to each of the customers that you want to reach.'



The Performa 630 is a great all-rounder, but Marco Landi believes you need more specialised tools.

Landi has set Apple Europe the task of concentrating on three specific areas of interest during the rest of 1996, with the aim of leading the computer industry in those areas. This will mean changes in the types of Mac you can choose, the software you can buy and the places where you can buy your Mac. Basically, everything is up for grabs.

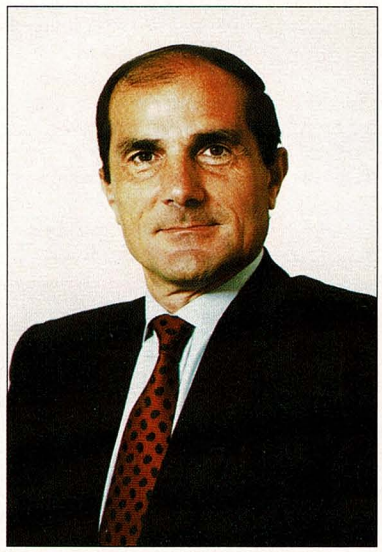
Homeward bound

The first place Apple is setting its sights on is the home. Marco Landi feels that there are special reasons why the Apple Mac is so suited to your home: 'The chromosomes of Apple are education... ease of use. Consider that the Mac is so easy to use. We cut the barrier of, "Ah, this is the computer: the mother cannot use it, because the mother is not an engineer."

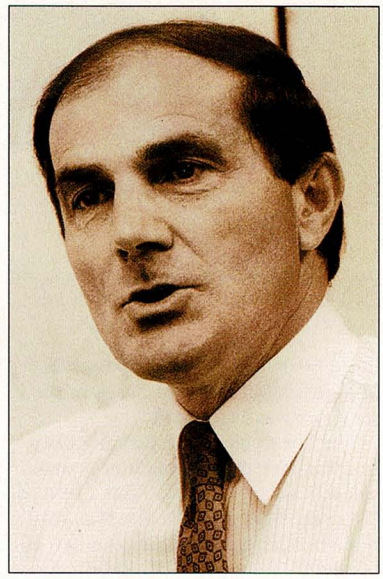
'This is such an easy machine to use that what I want to do is put this really in the family, and make sure that I put the right software that the mother can take precious time with her children to teach and to learn. I want to see this as a complement to the time that the children spend in school with the computer.

'I want the mother to spend precious time with her children, to teach and to learn'

'I want the mother to have good software so that she can take the children out of the TV, and she can spend valuable time, precious time, with her children. There will be beautiful interchanges of teaching and learning – give and take.'



Landi believes strongly in Apple's involvement in schools and education: 'The chromosomes of Apple are education... ease of use.'



Marco Landi is bringing the pragmatic, forthright approach he developed at Texas Instruments to bear on the European arm of Apple.

It's in addressing this first target area that Landi displays his most brutal logic side-by-side with his eloquence about how the Mac affects people's lives. 'We want to be the number one in the family. So we have selected two sub-segments – the family with children and the family with teenagers.

'We have been looking for the best partner to bring the best software to the Performa line – which is the line for the family. And that is why we have decided to partner with the best name there is today in the market – that is Disney.'

Disney software – such as *The Lion King Animated Storybook* – is set to be included with new Performas when they appear later this year, according to Landi. 'And now we build up on top of Disney with several others – local European content. I don't want the American culture to invade our houses. In France, we need to have French content.'

'We want to be number one in the family, so we have decided to partner with Disney'

There is a certain irony in Apple – the Californian archetype – teaming up with all-American Disney to produce culture for Europeans; but Landi believes the Disney reputation puts it

above issues of nationality. As he says, 'Disney is a magic name. It's family.' And the programs are going to be reworked, making them more appropriate for each country.

Onward with the master plan: 'We have been looking at what is the most attractive software that we can provide for the teenagers,' Landi continues. 'We have identified two things for 1996 – music and soccer. We will focus to develop the best CD Plus [a combination of music audio CD and Mac CD-ROM] and the best CD-ROMs on the most important European soccer teams. We have already started with Italy: we have two beautiful CD-ROMs on AC Milan and Juventus.'

School's out

Landi also expects Apple to make an impact in education. In MACFORMAT 36 you read about the collaboration with top schools computer firm Acorn. He sees a huge opportunity here: 'Information technology has made a revolution in business. It's started to make it into the family. But it's far away from doing anything in education.'

Landi claims the use of computers in Europe's educational system lags well behind their take-up in other parts of the world – something that is going cause harm in the long run. 'The cost of our standard of living in

'The computer should change the way you teach or you learn'

Europe is so high that if we want to protect that, we have to make sure the people leaving our schools have a higher degree of creativity.

'That's the reason why we have decided to be an agent to promote the use of the computer in school. The computer should change the way you teach or you learn. That's the reason why we have decided to combine efforts with Acorn. That's the reason why we have this joint effort that will address initially the UK market, but that is aimed to look at the total European market.

'We will have products that will be totally dedicated to education. We will not have the 630 for education; we will have a machine dedicated to education. For example, you don't need CD-ROM everywhere. You don't need to have the largest screen that you have today. You need to have something that will be really dedicated to the children.'

Publish it easy

If there's one area of business with which Apple's name has become synonymous since the firm's inception,

The recent deal between Apple and Acorn (above) is an example of Apple's new, flexible thinking.

it's desktop publishing (DTP). It was the combination of the Mac, the laser printer and *PageMaker* software that made the industry possible, and because it's made publications cheaper to produce, no one has been left untouched by DTP's introduction. According to Marco Landi, publishing is set for even greater transformations, and he expects Apple to lead the way. He says publishers now want to create material for other media as well as for print: 'You want the same thing to be published online, on video, on CD-ROM. Multimedia.

'What's happened is that not only the publisher needs to do that. [Businesses] all need to communicate: with their partners, with their sales force, with their customers. And they want to do it online.

'Go to the entertainment industry, for example. TV, music – they have all the same needs. Their journalists must have all their video – everything that they have already done – online. You want people to be able to access all the information that they need to write their articles... and in the case of TV, to

Continued on next page

An open letter from Marco Landi to you.

Dear Apple Customers,

Apple began with the simple idea: that the power of computing should be available to everyone. With that idea, we helped launch the personal computer. And as we begin our 20th year, the idea of individual empowerment continues to be the driving force behind Apple Computer.

As many of the 22 million users of Macintosh systems know, the press has been reporting that these are challenging times for Apple. We would, therefore, like to communicate directly with you and to reassure you that the top priority of Apple's board and management team is to take action to prepare Apple for its next chapter of growth and profitability.

The major restructuring we are currently implementing is focused on how best to allocate our resources to ensure that we continue to meet our customers' needs with solutions they require at price points they can afford. Moreover, the actions we are taking to put our fiscal house in order will also have vast implications for how we do business.

We've taken measures to build on our market leadership in the home, education and key commercial segments. And we are committed to building and preserving our most valued assets: the Apple brand, customer loyalty and Apple employees. We are moving forward aggressively, with new technologies and products that will play to Apple's strengths in multimedia and the Internet. And with the strong support of our third-party developers, we now have over 1,400 Macintosh native PowerPC applications, including over 800 that are "Mac-first" or "Mac-only".

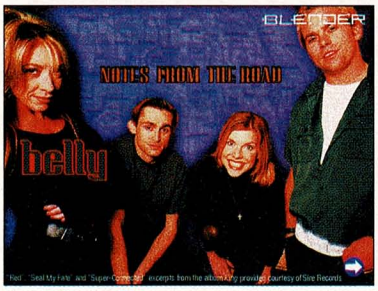
Looking forward, Apple is positioning itself to take advantage of information industry trends, with the delivery of Copland, the code name of our next generation operating system, and products based on the PowerPC microprocessor, the Newton platform and Pippin technology – the television based, affordable multimedia platform and Internet browser.

Apple's continued growth depends on constant and direct communication with you. So, I encourage you to watch spaces like this for important messages from Apple about vision and future strategies.

Rest assured: Apple's mission remains as vibrant today as it was in 1976. It is one that cannot be realised in a year, a decade or even a lifetime. I believe it is one of the most enduring missions of any business in the world.

Sincerely,

Marco Landi
President, Apple Computer, Europe
On behalf of Apple employees worldwide



Look out for more music-related CD-ROMs as part of Apple's plans for 1996 – this is *Blender*.

The Mac will appeal to every member of the family with something different for everyone.

Your children will be entertained and learn with Disney discs included with Macs later this year.

prepare their news. The same is right for banking. The banks need to communicate online, so they need to publish. They need to create something that goes to their customers. This is what I call the interactive publishing and communication market. It's a huge market that is opening up, and Apple has all the technologies.'

Landi says Apple will also be working more closely with specific companies to develop a sense of their multimedia needs, and that it will then tailor its products based on what it finds. 'The hardware will not change drastically in '96, but the software will change drastically.' And Apple's publishing strategies – like each of the markets it's planning to target – will also exploit the continuing growth of the Internet.

Apple on the Net

'What we want to have in everything here is the Internet,' says Landi. 'All our products will be easy to connect to the Internet.' He believes the Net will alter the way you think about computers, right down to which one you choose to buy.

'There is a major change in the market that will change the rules of the game – no more Mac against Windows, because there is this new phenomenon that is the Internet. The Internet is the platform.'

'We are positioning ourselves to go beyond the computer, to provide easy communicating.'

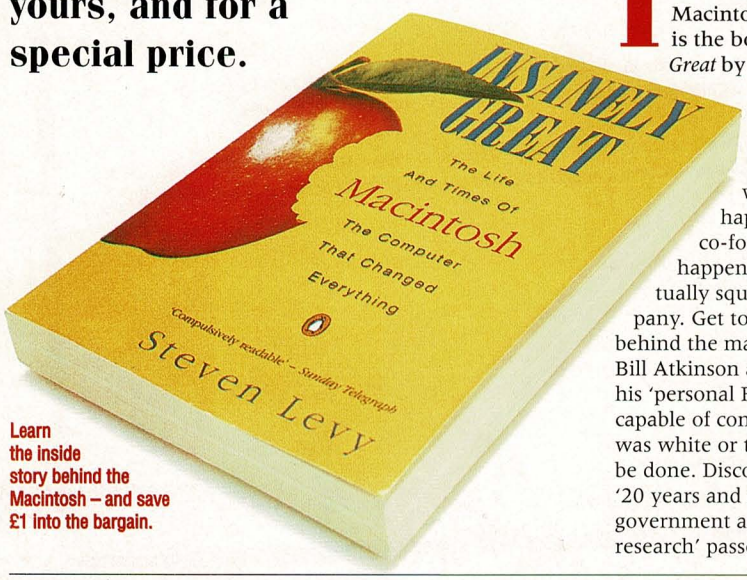
Apple's Pippin design will offer Net access to people who can't afford a Mac. A small console machine, derived from the Mac, it's on sale in Japan already, and will come to Europe – probably late this year. 'Pippin will provide the lowest-cost access to the Internet, and it will also be compatible with Mac OS,' says Landi.

'I was visiting Cupertino [Apple's Californian headquarters] with an Italian bank. They want to use Pippin to communicate with their customers. And then they started to think: "Once we have that, we will not just communicate on banking services. Why not do also insurance services?" Once they have established the link, they want to build other services that they can provide to their customers.'

Landi believes that the very existence of the Internet is now forcing Apple to reappraise its most fundamental beliefs about the way it does business. 'The major battle will be, more and more in the coming months, who will provide the easiest way to access the Internet? Who will provide the best way to use the services? Today we are positioning ourselves to go beyond the computer. We are becoming the company that wants to provide easy communicating. This is the new image of Apple.' **MF**

Exclusive book offer

The true story of the 'computer that changed everything' – the personalities behind the Mac, the corporate in-fighting – can all be yours, and for a special price.


INSANELY GREAT
The Life And Times Of Macintosh
The Computer That Changed Everything
'Compulsively readable' – Sunday Telegraph
Steven Levy

Learn the inside story behind the Macintosh – and save £1 into the bargain.

If you've always wanted to know the real story of how the Macintosh came to be, then this is the book for you. *Insanely Great* by Steven Levy is the full inside story of 'the computer that changed everything'.

Learn how the Mac we know almost never happened, how Apple's co-founder Steve Jobs made it happen, and how he was eventually squeezed out of the company. Get to know the personalities behind the machine – Steve Wozniak, Bill Atkinson and, of course, Jobs and his 'personal Reality Distortion Field', capable of convincing you that black was white or that the impossible could be done. Discover how the results of '20 years and millions of dollars of government and top-level corporate research' passed into 'the hands of a company that only a few years before had operated out of a garage'. The story of the manoeuvrings, the inspirations, the corporate politics is as compelling as any whodunnit.

By special arrangement with Penguin Books, MACFORMAT readers can save £1 off the price of *Insanely Great* and get it delivered for free (in the UK). The book's cover price is £7.99, but you can order a copy for just £6.99, including p&p.

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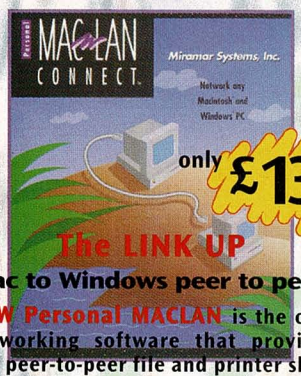

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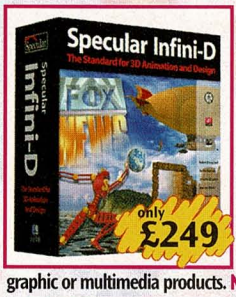

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SPR3	Sportster FaxModem (28,800 baud, BABT approved)	£189.00
SPEB	SupraExpress FaxModem (quality, low cost 28.8 baud)	£135.00
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FEHA	EtherLan Hub 9 (9 port ethernet 10baseT Hub)	£125.00
FRAD	Farallon AirDock (Infra Red LocalTalk connector)	£69.00
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ASPA	AsantePrint (Ethernet to AppleTalk printer router)	£249.00
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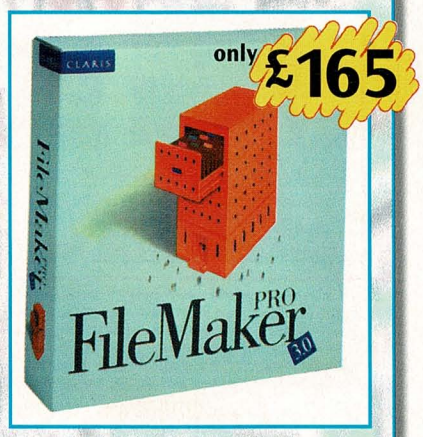

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9)	LEMC	**Lemmings Bundle**	£22.00
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9)	F18K	**F/A18 Hornet** (Korean Crisis mission for F/A18)	£29.00
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11)	FSHB	**FlashBack** (science Fiction adventure)	£25.00
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SIMI	**Sim Isle** (control your own island)	£29.00

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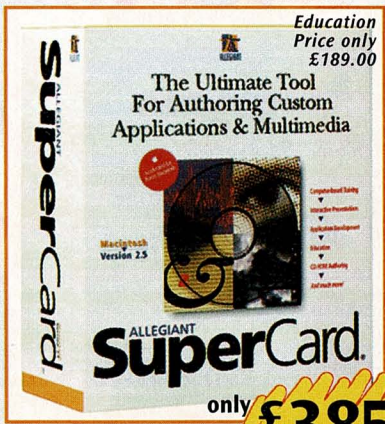

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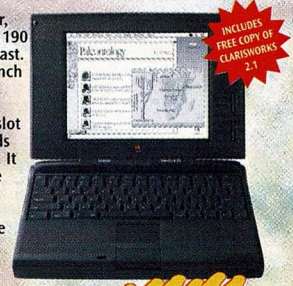

With its 66Mhz 68040 processor, the PowerBook 190 4/500 is really fast. It sports a 9.5 inch backlit passive matrix 16 grey level screen, a slot for PCMCIA cards and a trackpad. It is also available with a dual scan colour screen. Software includes ClarisWorks, Route 66, a great solitaire game and the PowerBook mobility bundle.

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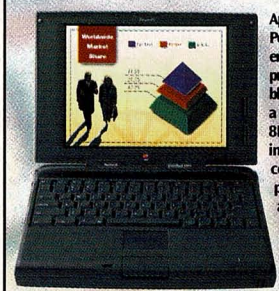

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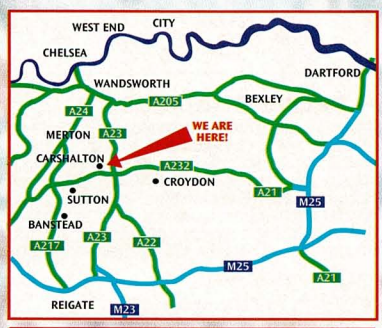

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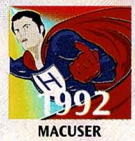

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FASTER SMARTER BIGGER BETTER MORE...

Want to get even more out of your Mac? We'll show you how, with 14 packed pages of advice on the best ways to upgrade your machine. Help your Mac reach its true potential!

Your Mac is a fabulous piece of kit. You can type your letters on it, organise your accounts, schedule your time, and connect to the Internet. With a bit more knowledge, you can use it for graphic design, desktop publishing, video and sound editing, and multimedia authoring. If you get bored with all that, there's always games, multimedia, and education out there. Yes, the Mac's a brilliant piece of technology.

The problem, as with all technology – *especially* computers – is that after a couple of years your digital friend is no longer at the cutting edge. It may even be considered antiquated. When this happens, it might not bother you. Plenty of people out there are more than happy with what their Macs can still do, but if you like to experiment with new technologies like multimedia, you might find your machine isn't up to it any more.

Although they are cheaper than ever before, a new Mac will still set you back at least £1,000 – money that you probably don't have lying around. The solution to the problem is to upgrade your existing Mac by adding an expansion card or even replacement processor. These can give you more power, more speed and more freedom. With the exception of the first two Macs, the 128K and 512K, all Macs are expandable in some way.

Over the next 14 pages we explain the various types of expansion slots on Macs over the years and detail what they can do for you. Then, starting on page 56, we survey the range of upgrades available for the Mac range, to help you choose the one that's best for your needs.

Finally, from page 60, we guide you step-by-step through the process of fitting processor upgrades in a representative selection of Macs. There's even a step-by-step guide on this issue's Cover CD-ROM, which takes you through fitting more RAM, a PDS video card, a clock oscillator chip, and a hard drive. If your Mac isn't all it was, let MACFORMAT help you make it bigger, better and more powerful than ever!

UPGRADE OR EXPANSION?

If you want to be precise about it, there's a difference between an upgrade and an expansion. The former, strictly speaking, is a plug-in card or circuit board replacement that increases your Mac's speed and power across the board – all features, such as the graphics display, processor speed and disk access are improved. By contrast, an expansion enhances a specific function – most often the display or processor speed. So an accelerator is strictly an expansion, not an upgrade. But it does 'upgrade' your processor's performance, so we won't be too pedantic about the two terms. Most people aren't, but we thought we'd mention it, just so you can sound like you know what you're talking about when you go shopping for... well, one of those thingies that makes your Mac, you know, *better.*

Continued on next page

Faster, smarter...

It comes to us all. Everyone around you seems younger and faster and you can't keep up any more. Rejuvenate with Lindsay Bruce, and he'll stop it happening to you.

If you've decided that your Mac just isn't powerful enough and you want to upgrade it, the first thing you should do is ask yourself what you want out of a more powerful machine. If, like most people, you just want things to happen faster, then there are plenty of upgrades and accelerators available to do just that. But if you want to be able to do new things, run new software and explore new areas, then you'll need to think more carefully about the type of upgrade or accelerator to go for.

An upgrade usually takes the form of a completely new processor or logic board for your Mac. You'll find the most common upgrades are in card form – circuit boards that plug into a socket on your Mac's motherboard (main circuit board). Others, like those from Apple, are logic board upgrades which amount to a brand new computer inside an old case.

It's a common misconception that you have to go to Apple to upgrade your Mac. This isn't the case, and the chances are you won't unless your Mac is still covered by an Apple warranty, which limits you to visiting an Apple Authorised repair centre.

The majority of upgrades are made by DayStar, MicroMac, and Newer Technologies. Apple mainly produces motherboard upgrades, which are identical to the guts of the Mac you're upgrading your machine to. For example, you used to be able to buy a PowerMac motherboard upgrade for the Centris 610. The new motherboard was identical to the board in the 6100/60, and cost just less than an off-the-shelf PowerMac.

A company like DayStar, on the other hand, mainly produces low cost plug-in NuBus and PDS cards (see the box on page 52 for the difference). The advantage with these is that you can upgrade your Mac for less cash. The down side is that it will no longer be covered by your guarantee. With an Apple motherboard upgrade, your Mac motherboard is covered by a 12 month limited warranty.

There are plenty of accelerators on the market, ranging from graphics cards to SCSI cards, but they do tend to be specialist, aimed at the more professional user – they accelerate specific software (commonly *Photoshop*), for instance, or enable your Mac to drive a much larger monitor. Let's face it – a 21-inch monitor would be a lovely

How your Mac works

To help you choose what sort of upgrade to go for, it's helpful to know a little about how your Mac works. You don't have to have a degree in electronics, you just have to know the important bits and what they do.

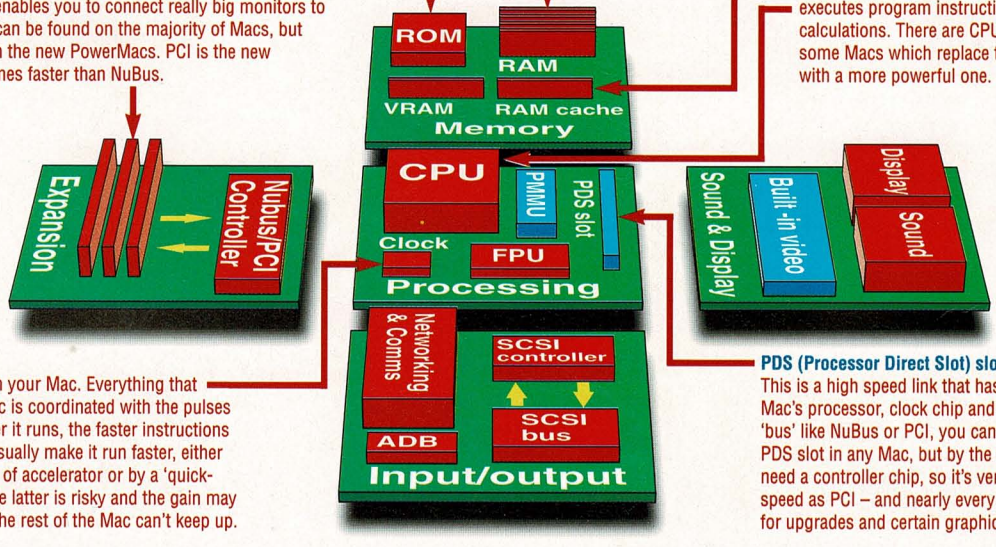
ROM (Read Only Memory)
Your Mac's long term memory. Sections of the Mac Operating System are stored here permanently, along with the startup routine and resources like the Toolbox and QuickDraw on which all applications can draw. Data held in ROM is permanent and cannot be changed, only read, although certain software can convince your Mac to temporarily ignore parts of this data.

RAM (Random Access Memory)
This is your Mac's short term memory. It's used to store application code before it's run by the main processor. RAM comes as either SIMMs (Single In-line Memory Modules) for older Macs, or DIMMs (Dual In-line Memory Modules) for the newest PCI PowerMacs. Adding more RAM is the most common upgrade of all.

Cache
This is a section of high speed memory that is used to store frequently used data from the main RAM. All PowerMacs have a RAM cache slot, as do some of the 68K based Macs – for example, the IIsi, IIfx and LC. Adding a cache card can offer the most dramatic of performance improvements.

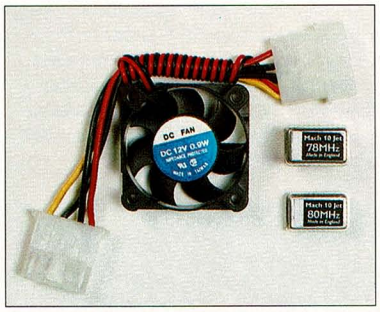
NuBus/PCI (Peripheral Component Interconnect) slots
These are expansion slots into which you can plug accelerator cards, enabling you to do more things or do them faster. A good example is a graphics card, which enables you to connect really big monitors to your Mac. NuBus slots can be found on the majority of Macs, but PCI can only be found in the new PowerMacs. PCI is the new standard and is three times faster than NuBus.

Processor
The processor is your Mac's brain. It coordinates the flow of information through the Mac's circuits, executes program instructions, and performs calculations. There are CPU upgrades available for some Macs which replace the processor entirely with a more powerful one.



Clock
This is the timing chip in your Mac. Everything that happens inside your Mac is coordinated with the pulses from this chip. The faster it runs, the faster instructions are executed. You can usually make it run faster, either by adding a special kind of accelerator or by a 'quick-and-dirty' DIY fix, but the latter is risky and the gain may be negligible anyway if the rest of the Mac can't keep up.

PDS (Processor Direct Slot) slot
This is a high speed link that has direct access to your Mac's processor, clock chip and RAM. Because it's not a 'bus' like NuBus or PCI, you can't have more than one PDS slot in any Mac, but by the same token it doesn't need a controller chip, so it's very fast – about the same speed as PCI – and nearly every Mac has one. It's used for upgrades and certain graphics cards.



For less than £100, you can buy a clock-chipping accelerator that will increase your Mac's speed by 20-40%. They're available for nearly all PowerMacs and Quadras, as well as some older Macs.

DOING IT YOURSELF

Should you upgrade your Mac yourself? Most Macs are fairly easy to upgrade, as long as you have a basic knowledge of what a circuit board is. You don't need to know what it does – just what it is. Normally it's just a matter of plugging a new chip or board into the right slot. All you have to be careful of is how you handle things. However, if you've never taken the cover off your Mac, we strongly recommend you get an engineer or an Apple Authorised centre to do the work for you. Most of the dealers selling upgrades offer a fitting service too. All these will charge for it, but it'll be a lot cheaper than fixing any damage you might cause if you try the DIY option.

If you do opt for DIY, be warned. Computer chips are very sensitive things, and the static electricity on your clothes and body can easy destroy the very delicate circuitry inside the chip. You should always make sure you are effectively earthed (use an anti-static wrist strap whenever possible) and never, ever touch the circuitry itself, only the edges of the boards or chips you are fitting.

The other point you should bear in mind is that fitting any internal hardware yourself is going to invalidate the guarantee on your Mac if it is still within its warranty period. Apple likes to make Macs as easy as possible to upgrade, but it doesn't make any promises about doing it yourself.

ON THE CD

GURU – the complete Guide to RAM Upgrades for every Mac.
Gauge Series – measure your Mac's performance.
Speedometer – test your Mac against the benchmarks.

thing to have, but a tad on the expensive side if you only use your Mac to play games and write the odd letter. But should you need one, you can get an accelerator for just about anything. Common cards include *Photoshop* accelerators, graphics cards, video boards, TV tuners, MPEG encoders/decoders, SCSI accelerators, ISDN (Integrated Digital Services Network) cards, and multi-processing cards.

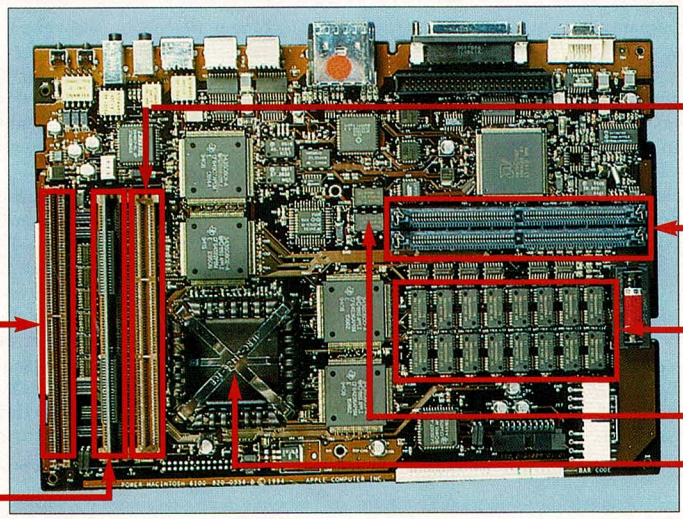
You want more?

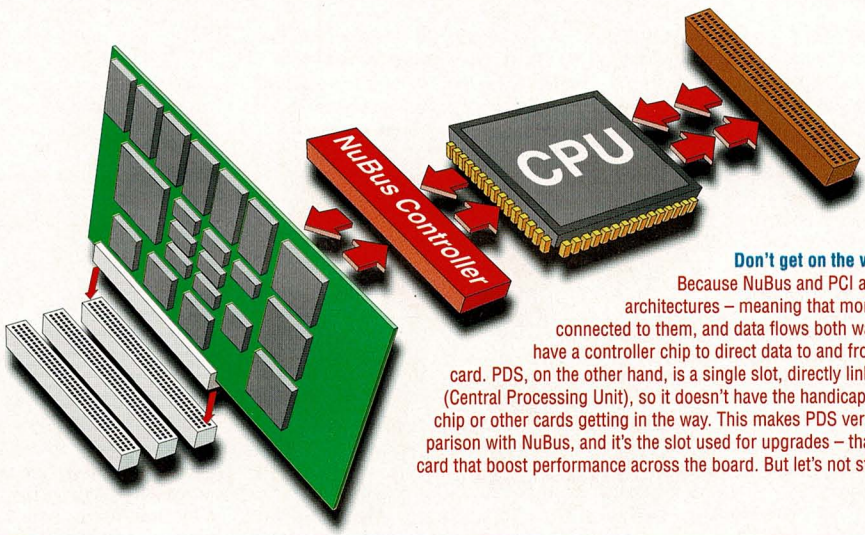
There are other options for more speed. You can buy a clock-chipping accelerator that fits over the clock chip on your Mac's motherboard and increases its speed. This makes the processor, and therefore the rest of your Mac, run at a higher speed. These accelerators have the advantage of being cheap to buy and easy to install, but you do need to be careful not to push your processor beyond its physical limits, and they do invalidate your guarantee.

Or you can buy more memory. Memory comes in various guises, including RAM, VRAM, and cache cards (see page 53 for details of these). Adding more RAM to your Mac will speed up some applications, especially those that demand lots of memory to hold work-in-progress (like *Photoshop*). More RAM also enables you to run more applications at once. Adding more VRAM gives you the option to

Continued on next page

The motherboard from a PowerMac 6100. Like many other entry-level Mac models, the PowerMac 6100 doesn't have NuBus slots, but you can connect a NuBus card to the PDS slot via an adaptor.


ROM slot. This is found only in PowerMacs and the IIci, and is reserved for use by Apple at some time in the future. It's an expansion slot that will allow the ROM in all PowerMacs to be updated when a new Operating System – such as System 8 or 'Copland' – comes out.
RAM (Random Access Memory) slots
PDS (Processor Direct Slot) slot
On board RAM
Clock
Processor chip
Cache



Don't get on the wrong bus

Because NuBus and PCI are both 'bus' architectures – meaning that more than one item is connected to them, and data flows both ways – they have to have a controller chip to direct data to and from the correct card. PDS, on the other hand, is a single slot, directly linked to the CPU (Central Processing Unit), so it doesn't have the handicap of a controller chip or other cards getting in the way. This makes PDS very fast in comparison with NuBus, and it's the slot used for upgrades – that is, the kinds of card that boost performance across the board. But let's not start *that* again...

display more colours and use bigger monitors. Cache cards speed up your Mac's memory addressing, which results in faster processing. If you own a PowerMac, a cache card is definitely worth spending your money on, giving you a marked speed boost for very little outlay. A 256K Level 2 cache is the most typical one to be found in PowerMacs today.

There are plenty of other third-party hardware and software products that enable you to do more, do it faster, and do it easier. We glance at these in a slightly guilty way on page 54, along with some not-quite-legitimate tricks that we couldn't *possibly* recommend...

First, it helps to know a little about the inside of your Mac, what parts do what, and how you can enhance their functions with upgrades.

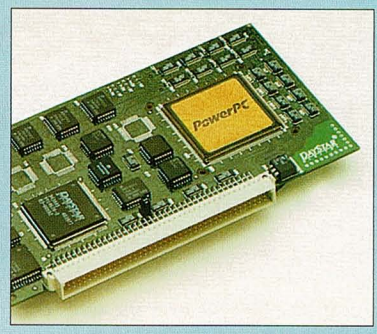
A TALE OF MACS AND POWERMACS

ROM (READ ONLY MEMORY)
Your Mac's permanent memory. The ROM stores part of the Mac operating system as well as details about your Mac's hardware. This information cannot be changed or lost, no matter what.

Prior to 1994, all Macs used the 680x0 series microprocessors. Apple has now committed itself to the PowerPC range of processors, so from now on, new Macs will be PowerMacs. Some Mac models can be upgraded to PowerMac status, but most can't. So does this mean your old 68K Mac is obsolete?

Not by a long shot. In the first place, even if you can't upgrade your existing Mac to a PowerMac, there are still plenty of third party accelerators and add-ons for nearly every Mac model, enabling you to do more things faster. The truth of the matter is this: if your existing Mac does everything you need, then you don't need to upgrade. If it ain't broke, don't fix it.

Secondly, there are some 20 million Macs out there and only about three million PowerMacs so far, meaning that software companies are unlikely to drop 68K programs in favour of PowerPC-native ones, or even discontinue supporting them as long as there is a demand. When Apple introduced the PowerMacs, it made the transition as painless as possible by ensuring that the new machines could run older 68K programs. This not only encouraged users to buy the new machines, knowing that they could continue to use their software; it also gave that software an extended life.



It's fast, it's sexy, it's the most powerful desktop computer processor in the world, the PowerPC chip. But if you can't stretch its capabilities, there's no point in having one.

PowerMacs run 68K software at speeds roughly comparable to a Quadra. In practice you only get a performance benefit from upgrading to a PowerPC machine if you also upgrade to 'native' *software* – programs specially written to exploit the extra power of the new chips.

NUBUS, PDS, AND PCI – SORT OUT YOUR SLOTS

NuBus, PDS and PCI are all types of expansion slot that can be found in the Mac. All Macs since the Plus have had a PDS slot (except the new PCI PowerMacs, which have processor daughterboards). This leaves NuBus, and while most Macs made in the last few years have between one and three NuBus slots, on some less expandable models – including SEs, Classics, LCs and Performas – they are conspicuously absent.

NuBus
This is the most common expansion slot to be found in a Mac. It's a basic expansion slot, designed to take graphics and video cards, modems, and all manner of other bolt-ons. NuBus boards are not so much upgrades that boost everything, but enable your Mac to do certain specific things faster or bigger. A video card is a good example – it turns your Mac into a video editing suite. NuBus has since been surpassed by PCI, which is faster and cheaper, but there are still plenty of NuBus boards out there, and support for them will continue into the foreseeable future.

PDS (Processor Direct Slot)
This type of slot is used mostly for upgrades and general accelerators that make everything go faster. The PDS slot has a direct link to your Mac's processor and its clock chip, which makes PDS cards very fast indeed. If you upgrade your Mac to a faster 68K or PowerPC based processor, the card you buy will be a PDS one. But not all PDS slots in Macs are the same. The number of pins varies between 96 and 120 across the range of Macs, and what the pins are connected to often changes. Confusingly, this means that certain PDS cards will only work in certain Macs. You should never try and fit a PDS card into a Mac it wasn't designed for.

Peripheral Component Interconnect
You've probably heard a lot about this one recently. PCI is the successor to NuBus and is substantially faster – NuBus runs at 10MHz, PCI runs at 33MHz. The PCI standard is already well established in the PC world, so Mac-compatible PCI cards are much cheaper than NuBus. PCI does pretty much the same job as its predecessor – it's used for accelerators specially designed to do certain tasks rather than general upgrades.

JARGON BUSTERS

Clock chip
The heartbeat of your Mac. Produces a series of pulses which form the timing for your Mac. The faster the clock chip, the faster your Mac runs. The rate at which the chip pulses is measured in MHz (megahertz) – millions of pulses a second.

Clock chipping accelerator
Speed up the clock rate at which your Mac runs. There is a limit, of course – all the components inside your Mac are designed to work at a particular speed band, and if you ramp the clock speed up too high, they'll stop working. Clock chipping accelerators are most effective in PowerMacs, where the components are designed to work at high speed.

Daughterboard
In the very newest Macs, the 8500 and 9500, the main processor sits not on the motherboard but on a smaller 'daughterboard'. The idea is that when you want to upgrade the main chip, you can replace this smaller board more cheaply and easily, rather than replacing everything.

DIMM (Dual In-line Memory Module)
Similar to a SIMM, but the memory chips on a DIMM are arranged in pairs to suit the new PowerMac memory bus, which accesses twice as much memory in one go as previous Macs.

DRAM (Dynamic RAM)
A type of memory chip used to make SIMMs. Not as fast as SRAM chips, but much cheaper.

FPU (Floating Point Unit)
Also called a 'maths co-processor'. A second processor that excels at numeric calculations. Some processors, such as the 68040 found in Quadras and the PowerPC chips found in PowerMacs, have an FPU built in. The older 68K series processors, the 68000, 68020, and 68030, don't have FPUs on board, and separate chips have to be installed in your Mac. The FPU is used mainly by calculation-intensive applications like 3D modelling and spreadsheets.

Motherboard and Logic board
The large green square thing with blobs inside your Mac. Holds all the computer chips that make up your Mac in one handy place. Don't break it, it's very expensive.

Processor
Your Mac's brain. It coordinates the flow of information through your Mac's circuits, executes program instructions, and performs calculations.

RAM (Random Access Memory)
Your Mac's short term storage. Information and program code is held in RAM until the processor can deal with it. Unless saved to disk, everything in RAM is lost when you switch the power off. The more RAM you have, the more programs you can run at the same time and the more documents you can have open.

SIMM (Single In-line Memory Module)
A small circuit board that holds memory chips. These form your Mac's main memory, or RAM. All Macs, except the current range of PowerMacs, use SIMMs.

SRAM (Static RAM)
A type of memory used to make RAM caches. Very fast, but expensive.

VRAM (Video RAM)
A special type of memory used to store images before they are sent to you monitor. The more VRAM you have, the more colours your Mac can display, on bigger monitors and in more detail

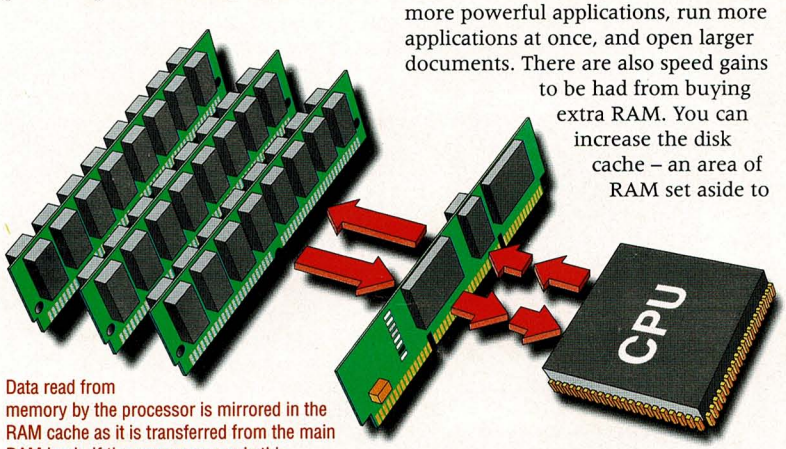
Bigger, better...

Adding more memory is one of the simplest upgrades and probably the most common. But which kind of RAM do you need, and what can it do for you?

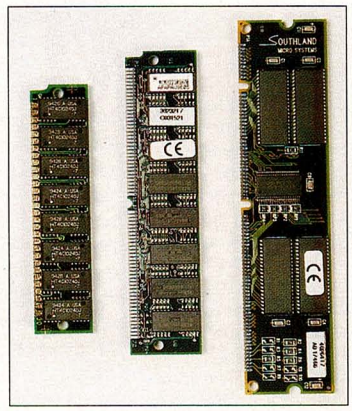
The most valuable commodity in the computing world is memory. All Macs come with enough memory to run the System software and a few mainstream applications or games, but if you are a serious user, then you'll probably want to upgrade your RAM. But do you want DRAM, SRAM, VRAM or a RAM cache? Let's begin with a quick guide to what it all means.

RAM – Random Access Memory – is your computer's 'workspace'. The more it has, the more it can do at one time. Many professional applications such as *Photoshop* won't work at their optimum unless you give them 16Mb of memory or more. A cheap solution is to use virtual memory, a method that enables your Mac to use space on your hard disk as if it were RAM. The only problem with this is that it slows your Mac right down as it swaps data from real RAM to your hard disk and then back again.

Buying memory is a good investment. A Mac with more RAM can run more powerful applications, run more applications at once, and open larger documents. There are also speed gains to be had from buying extra RAM. You can increase the disk cache – an area of RAM set aside to store frequently used data from the hard disk – to speed up access to data, and you can also give applications more memory, so they are not slowed by repeatedly loading program code from your hard disk.

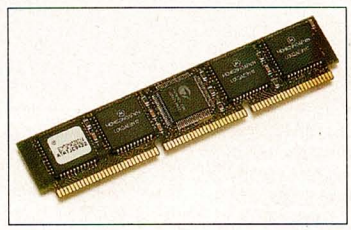


Data read from memory by the processor is mirrored in the RAM cache as it is transferred from the main RAM bank. If the processor needs this information again, it can get it from the much faster RAM cache instead of main memory.



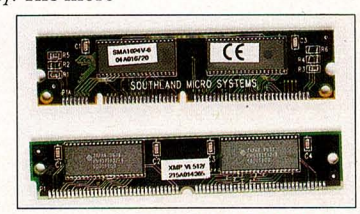
The three main types of Mac RAM. Left to right: a 30-pin SIMM, used in compact Macs and the Mac II's; a 72-pin SIMM, used in the Centris series, Quadras and PowerMacs; and a 168-pin DIMM, used in the new PCI PowerMacs.

You may also be able to buy a RAM cache for your Mac. All PowerMacs, and some 68K-based Macs – for example the IIsi, IIfx and LC – will accept a Level 2 RAM cache. A RAM cache is a small area of very fast SRAM (Static RAM) that stores frequently used data from your Mac's main memory. DRAM (Dynamic RAM), used to make the SIMMs and DIMMs that form your Mac's main memory, is slower than SRAM, but much cheaper to manufacture. An SRAM cache is in the order of three times faster to access than a DRAM SIMM or DIMM. Your Mac's processor has a very small RAM cache (8K on the 68040, 32K on the PowerPC 601) built in, but by fitting a second cache (hence the term 'Level 2'), you can dramatically improve the time it takes the processor to retrieve data from memory.



Bunging a RAM cache in your Mac will speed up the processor by up to 20%. This one's for a PowerMac, but some 68K Macs will accept a cache card as well.

Last, there's VRAM (Video RAM). VRAM is a dedicated portion of high-speed memory that your Mac uses to store images before they are sent to your monitor for display. The more VRAM you have, the more detail and colour the images can be described in. You can also use a larger monitor and still have the same number of colours. Some Macs, such as the Performa 630, don't use VRAM but use a dedicated portion of DRAM instead – the same stuff used to make the RAM SIMMs that form your Mac's main memory. DRAM based display is cheaper than VRAM, but it's slower and can't be expanded. Other Macs, such as the entire Mac II series with the exception of the IIvx and IIvi, don't have any VRAM and rely on a graphics card plugged into a NuBus slot.



Adding VRAM SIMMs to your Mac enables you to display more colours on screen. But some Macs don't have VRAM slots, so either they can't be expanded or they use a different system entirely. See the table to the left.

Continued on next page

VRAM EXPANSION

If your Mac can accept it, adding more Video RAM can give you a higher resolution display or enable your machine to drive a bigger monitor.

Mac	VRAM	Slots	Max VRAM
Colour Classic	256K	1	512K
LC	256K	1	512K
LCII	256K	1	512K
LCIII	512K	1	768K
LC475	512K	2	1Mb
Mac IIvx	512K	2	1Mb
Mac IIvi	512K	2	1Mb
Quadra 610	512K	2	1Mb
Quadra 650	512K	2	1Mb
Quadra 700	512K	6	2Mb
Quadra 800	512K	2	1Mb
Quadra 840	1Mb	4	2Mb
Quadra 900	1Mb	4	2Mb
Quadra 950	1Mb	4	2Mb
PowerMac 7200	1Mb	3	4Mb
PowerMac 7500	2Mb	2	4Mb
PowerMac 8500	2Mb	2	4Mb
PowerMac 9500	2Mb*	–	4Mb

* The PowerMac 9500 uses a graphics card which has VRAM slots on board.

If your Mac isn't listed here, then you will need to buy a graphics card if you want to display more colours on your monitor. The PowerMac 7100 and 8100 come with graphics cards pre-installed and don't use VRAM.

More...

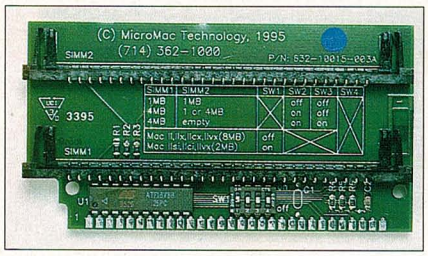
What if you can't afford to lash out on those expensive hardware upgrades and add-ons? Lindsay Bruce peeks into some clever, if slightly suspect, alternatives...

IN A RUSH?

If what you really want to do is speed up your Mac, you may be able to gain some improvement without spending a penny, simply by setting it up and using it more efficiently. For full details, see our cover feature on '50 ways to make your Mac run faster' in MACFORMAT 31. Turn to page 121 to order a copy if you missed that issue, but hurry – they're going fast!

Macs are designed to be as easy to upgrade as possible, but this wasn't always the case and technology still marches ever onwards. Consequently, there are a number of clever solutions to squeezing as much out of your old Classic, Plus or LC as is humanly possible.

These are not supported – or even recommended – by Apple, but they do enable you to do a bit more on your old Mac before you have to fork out for a newer model. The thing you must bear in mind with these types of solution is that you are coaxing your Mac beyond what it was designed to do, so don't be too surprised if the thing dies a death six months after you've ramped up the clock speed and added 68Mb of RAM. You are not so much prolonging the life of your Mac, you are prolonging its usefulness. These are best viewed as short term solutions if you just can't afford to buy a brand new Mac for a while.



The Simm Doubler from MicroMac enables you to plug two SIMMs into a single SIMM slot, increasing the maximum amount of RAM your Mac is designed to take.

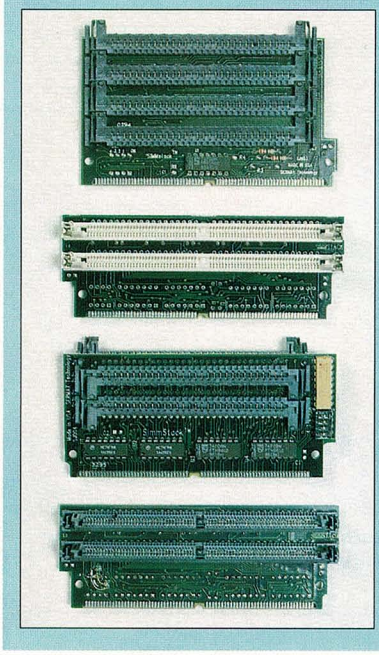
Right, dire warnings out of the way, what are these 'quick-and-dirty' tricks? Clever things to look out for include Simm Doublers that enable you to plug two SIMMs into one SIMM slot or use nominally 'incompatible' SIMMs – designed to fit inside another type of Mac – in your new machine. These are worth considering if you have already made a substantial investment in RAM. For more details, see the 'Recycle your RAM' box.

Clock-chipping accelerators, which we've discussed already, can be a risky proposition. They generate extra heat (hence the need to install a heatsink or improve the existing one by fitting an auxiliary fan) and can put a heavy load on other components too, shortening their useful lives. Sometimes you gain only negligible performance increases, because other components (often the data bus) can't keep up with the clock-chipped processor. And you have to be careful not to push the processor itself beyond its own tolerances. That said, clock-chipping can be the most cost-effective way of extending the useful life of your old Mac.

Finally, how about an easy, painless and completely legit alternative to all this hardware stuff? *RAM Doubler* is a brilliant piece of software that uses clever management and virtual memory techniques to give you more usable memory and enables you to run more applications at once. It costs only £71 (or less) – call Computers Unlimited (0181 200 8282) for details.

From the same company, there's also *SpeedDoubler*, a surprisingly effective acceleration utility. It's not quite as miraculous as *RAM Doubler* and 'doubler' is in this case perhaps strictly a bit of an exaggeration, but it will speed up disk accesses and copying, as well as non-native applications running on a PowerMac. It's also £70, or you can buy both *Doublers* together for £94. Certainly cheaper than a PowerPC upgrade...

RECYCLE YOUR RAM



If you decide against upgrading your old Mac II, and instead go out and buy a brand new PowerMac, you may think you can't take the memory that you already own with you. Wrong, you can. You can buy an adaptor for nearly any Mac that will enable you to use 30-pin SIMMs in 72-pin SIMM or 168-pin DIMM slots. Apple doesn't recommend this, because the PowerMac SIMMs and DIMMs are faster than the older 68K SIMMs, but it does work, and it's certainly cheaper than buying new RAM. Because of the physical effect of plugging more SIMMs than intended into your Mac, each adapter is tailored to fit comfortably inside the case of each Mac model, so you'll need to specify which Mac you have. For more details about Simm adapters contact MacRapide on 0181 381 4810.

Using a SIMM adaptor, you can rip the SIMMs out of that old SE you've got sitting under the stairs and stick 'em in your PowerMac.

SO WHICH IS FOR YOU?

As this overview – and the charts over the next few pages – make clear, there are so many upgrades and accelerators available that it can be difficult to work out which one to go for. It depends entirely on what you want your Mac to be able to do.

If you just want a little more speed, then your best bet might be a RAM cache and perhaps a clock-chipping accelerator. This is a cheap solution and will make your Mac somewhere in the order of 30-40% faster, depending on the model. This is a good solution if you just use your Mac at home and want to be able to open documents faster or play the modern breed of more demanding games, or both. A RAM cache will cost you around £150 and a clock-chipping accelerator will set you back about £100.

If you want substantially more power, then a plug-in PDS processor card is a very good idea. There are lots of these cards available, and chances are that two or more of them are suitable for your Mac. Prices vary, as does the speed increase, but processor cards are usually available for between £200 and £600 and the speed gains will be in the order of 300–800%. These performance gains will be across the board – *everything* on your Mac will move much faster.

For more serious power, you're beginning to look at application-specific accelerator cards, designed to speed up individual functions on your Mac. This includes graphics cards that enable you to connect large monitors to your Mac, accelerator cards that speed up *Photoshop*, and video cards that enable you to record, play back, and edit full-screen QuickTime movies. These are usually NuBus-based cards (PCI for the new PowerMacs).

The most common accelerator cards are graphics cards. These are essential for the graphic designer or DTP guru, and enable you to display thousands or millions of colours on a 17-inch or larger monitor. Bigger monitors give you the option to work on documents larger than the standard 13-inch 640 x 480 pixel Mac screen. Turn to page 56 for details of upgrades available for *your* Mac.

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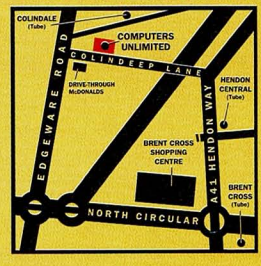

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Which upgrade?

So now you're power-hungry, speed-crazed and warped by the idea of opening your applications in seconds. Lindsay Bruce shows you where to go from here...

STRANGE BUT TRUE

The price and availability of Mac upgrades – in all their guises – fluctuates with the phases of the moon. We've done our best to make sure all these prices are correct, but you should shop around to find the best price and type of upgrade for your Mac.

You want to upgrade your Mac to a faster processor – but what's available for your Mac, and which do you go for? That's up to your needs and your wallet, but you should go for the fastest you can afford. That will future proof your Mac against new things you might want to try later.

One other thing to consider is your RAM. Problems can arise with upgrades because your Mac's SIMMs are too slow to work properly with an upgraded processor. If so, the only thing to do is to get faster SIMMs – a painful experience if you've already forked out lots of dosh. All upgrades push your Mac beyond what it was designed to do in the first place, so any upgrade is capable of causing minor compatibility problems.

Most of the upgrades in the table below are specific to individual types of Mac. Some of them have the same names, but they don't necessarily do the same job or cost the same price. If you buy a card or chip, check with the dealer that it's right for your Mac.

Upgrades – which one?

There are plenty of upgrades available to suit both your individual needs and your pocket. There are too many to list comprehensively on these few pages, so make sure you shop around before you invest. If you're not sure to look for, here's a quick guide to what each feature does.

Processor upgrades

Macs use one of two types of processor: a 680x0 series chip or a PowerPC chip. All new Macs now use the PowerPC chip, but there are some 20 million Macs worldwide that use the older 680x0 series processors. So what's the difference?

68000

This was the processor that the very first Macs used. By today's standards, not surprisingly, it's a dinosaur. Since the Mac 128, Mac 512, Plus, Classic, and SE are the only machines that are still using this processor, you are very unlikely to find any kind of accelerator for it. Replace it.

68020

Only two Macs ever used this processor: the Mac II and the LC. There's a fair jump in processing power over the 68000, but it's still no spring chicken. Like the 68000 processor, you'll be hard pushed to find any upgrade available today that uses this chip.

68030

This chip was used in nearly half of all the Mac models. It's significantly faster than its predecessors but still lacks an FPU. There are a whole host of upgrade cards that use this chip – they're generally for use in the 68000 and 68020 based Macs (that's the Plus, Classic, SE, LC, and Mac II).

68040

The fastest of the 68K series chips, this was used in Apple's Centris and Quadra range of Macs. The chip has a built-in FPU, which makes it ideal for high-end applications, such as image manipulation and 3D modelling. There is a variety of upgrades that use this processor, but because of its power, they tend to be quite expensive, often costing £400 or more.

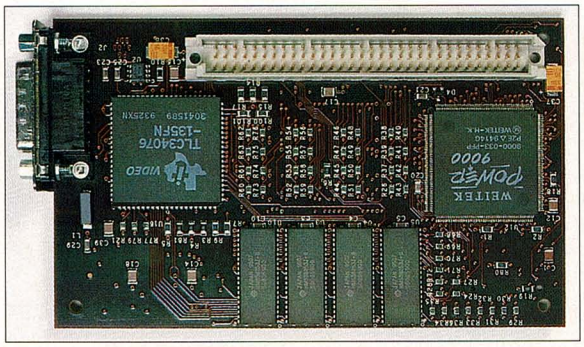
68LC040

This limited version of the 68040 was used in LCs and Performas. The main difference is that the 68LC040 lacks an FPU, but in all other respects it's just as fast as its 68040 cousin. The Performa 630, one of the most popular Macs ever, uses this processor. You

GIVE YOUR MAC SOME SHREDDED WHEAT

Model	Upgrades available	Price(£)	Contact
Mac Plus			
Performer	16MHz 68030	141	MacRapide
Multispeed	32MHz 68030, 4 x SIMM sockets & FPU	376	MacRapide
SE			
Performer	16MHz 68030	141	MacRapide
Multispeed	32MHz 68030, 4 x SIMM sockets & FPU	376	MacRapide
Classic			
Performer	16MHz 68030	141	MacRapide
Multispeed	32MHz 68030, 4 x SIMM sockets & FPU	376	MacRapide
Classic II			
Thundercache	32MHz 68030, 32K cache & FPU	200	Mygate
Thundercache Pro	50MHz '030, 4 x SIMM sockets, 32K cache & FPU	324	Mygate
Colour Classic			
Thundercache	32MHz 68030, 32K cache & FPU	200	Mygate
Thundercache Pro	50MHz '030, 4 x SIMM sockets, 32K cache & FPU	324	Mygate
SE/30			
DiiMO 030	50MHz 68030, 68K cache & FPU	376	MacRapide
Mac II			
Marathon	32MHz 68030 & FPU	234	MacRapide
DiiMO 030	50MHz 68030, 68K cache & FPU	376	MacRapide

Model	Upgrades available	Price(£)	Contact
Mac IIx			
Carrera 040	40MHz 68040 & FPU	704	MacRapide
DiiMO 030	50MHz 68030, 68K cache & FPU	376	MacRapide
Mac IIcx			
Carrera 040	40MHz 68040 & FPU	729	MacRapide
DiiMO 030	50MHz 68030, 68K cache & FPU	376	MacRapide
Mac IIci			
Carrera 040	40MHz 68040 & FPU	729	MacRapide
DiiMO cache 030	50MHz 68030, 128K cache & FPU	506	MacRapide
DayStar Turbo 601	PowerPC 601 66MHz	704	Mygate
DayStar Turbo 601	PowerPC 601 100MHz	998	Mygate
Mac IIfx			
Speedy	Variable clock chipper	105	MacRapide
Mac IIsi			
Carrera 040	40MHz 68040 & FPU	704	MacRapide
DiiMO 030	50MHz 68030, 68K cache & FPU	376	MacRapide
Turbo 601	PowerPC 601 66MHz	704	Mygate
Turbo 601	PowerPC 601 100MHz	998	Mygate
Mac IIvi/IIvx			
DiiMO 030	50MHz 68030, 68K cache & FPU	376	MacRapide
DayStar Turbo 601	PowerPC 601 66MHz	704	Mygate



If you're after more Desktop real estate, a graphics card, sometimes referred to as a video card, will enable you to connect a bigger monitor to your Mac. This one is Xceed's Colourfusion 24-bit card and costs £441. Contact Mygate on 0800 132591 for more details.

won't actually find many upgrade cards that use this chip, mainly because of its lack of FPU.

PowerPC 601

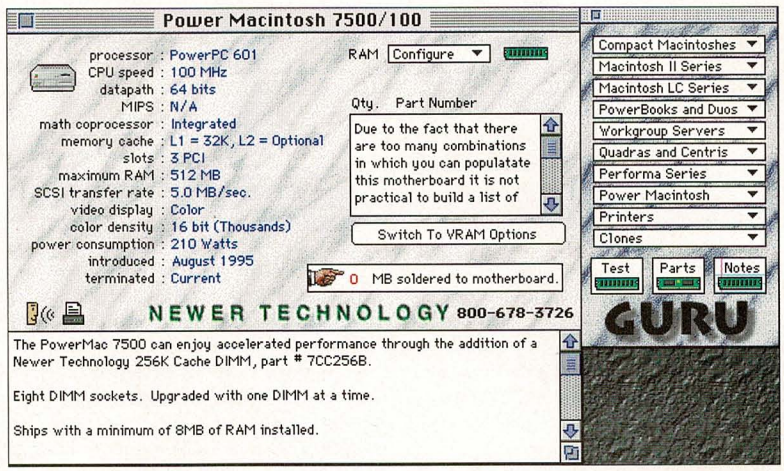
The first of the PowerPC series processors. The PowerPC series are RISC-based (Reduced Instruction Set Computing) chips, which are much faster than the 68K processors. The PowerPC 601 can be found in the first series of PowerMacs – the 6100, 7100 and 8100 – and two of the current series of PowerMacs, the 7200 and 7500. Currently, all PowerMac upgrade cards use the PowerPC 601 processor.

PowerPC 603e

The 603 chip is a low power consumption version of the 601. The 603e was designed for use in portable computers such as the PowerBooks, but has found its way into less powerful desktop Macs as well. The Performa 5200, 5300 and 6200 use the 603e as their processor. At the moment, the only Mac upgrades that use this chip are the PowerPC upgrades for the Duos and PowerBooks.

PowerPC 604

This is the latest and greatest of the PowerPC series chips. Substantially more powerful than the 601, the 604 processor is found in the PowerMac 8500 and 9500. At present, there are no processor upgrade boards available that use this processor, although Apple has plans to release faster processor daughterboards for the current range of PowerMacs, based on this chip.


Power Macintosh 7500/100
processor : PowerPC 601
CPU speed : 100 MHz
datapath : 64 bits
MIPS : N/A
math coprocessor : Integrated
memory cache : L1 = 32K, L2 = Optional
slots : 3 PCI
maximum RAM : 512 MB
SCSI transfer rate : 5.0 MB/sec.
video display : Color
color density : 16 bit (Thousands)
power consumption : 210 Watts
introduced : August 1995
terminated : Current
RAM Configure
Qty. Part Number
Due to the fact that there are too many combinations in which you can populatate this motherboard it is not practical to build a list of
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0 MB soldered to motherboard.
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PowerBooks and Duos
Workgroup Servers
Quadras and Centris
Performa Series
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Clones
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Parts
Notes
GURU

Need more help? On the Cover CD you'll find *GURU* from Newer Technologies, a nifty little utility that tells you how much your Mac's memory can be expanded to, and if it will accept a cache card.

FPU (Floating Point Unit)

Otherwise known as a maths co-processor, an FPU is a special type of companion processor that excels at mathematical calculations. An FPU can carry out complex calculations far faster than the main processor, which makes maths intensive programs like spreadsheets and 3D modellers really fly. For day to day work, though, the FPU makes little difference, and it won't actually make your Mac go any faster – although it will enable you to run some programs that otherwise won't even load.

Cache

A RAM cache is a small area of very fast memory that stores frequently read data from your Mac's main memory. Getting data from the cache is around three times faster than getting it from RAM, so this can speed things up considerably. The actual speed gain varies, depending on the Mac and the

Continued on next page

Model	Upgrades available	Price(£)	Contact
DayStar Turbo 601	PowerPC 601 100MHz	998	Mygate
LC			
Thunder	32MHz 68030 & FPU	117	Mygate
Thundercache	32MHz 68030, 32K cache & FPU	200	Mygate
Thundercache Pro	50MHz '030, 4 x SIMM sockets, 32K cache & FPU	324	Mygate
Speedster 040	25MHz 68040	469	MacRapide
Speedster 040	40MHz 68040	704	MacRapide
LC II			
Thunder	32MHz 68030 & FPU	117	Mygate
Thundercache	32MHz 68030, 32K cache & FPU	200	Mygate
Thundercache Pro	50MHz '030, 4 x SIMM sockets, 32K cache & FPU	324	Mygate
Speedster 040	25MHz 68040	469	MacRapide
Speedster 040	40MHz 68040	704	MacRapide
LCIII			
DiiMO 030	50MHz 68030, 128K cache & FPU	506	MacRapide
LC 475			
Powercard 601	PowerPC 601 66MHz	559	Mygate
Powercard 601	PowerPC 601 100MHz	822	Mygate
Performa 630			
Processor upgrade	Full 68040 processor inc FPU	234	Mygate
Powercard 601	PowerPC 601 66MHz	559	Mygate

Model	Upgrades available	Price(£)	Contact
Powercard 601	PowerPC 601 100MHz	822	Mygate
Centris 610			
Sonnet Quadbooster	40MHz 68040, CPU replacement board	453	MacRapide
Sonnet Quadbooster	50MHz 68040, CPU replacement board	494	MacRapide
DayStar PowerPro 601	PowerPC 601 100MHz	1,057	Mygate
Quadra 650			
Sonnet Quadbooster	50MHz 68040, CPU replacement board	494	MacRapide
DayStar PowerPro 601	PowerPC 601 100MHz	1,057	Mygate
Quadra 660AV			
Sonnet Quadbooster	50MHz 68040, CPU replacement board	494	MacRapide
Mach 10 Jet	Clock chipping accelerator	81	Xtal
Quadra 700			
Sonnet Quadbooster	50MHz 68040, CPU replacement board	494	MacRapide
DayStar PowerPro 601	PowerPC 601 100MHz	1,057	Mygate
Fastcache Quadra	PDS slot cache card	274	Comp W'house
Quadra 800			
Sonnet Quadbooster	50MHz 68040, CPU replacement board	494	MacRapide
DayStar PowerPro 601	PowerPC 601 100MHz	1,057	Mygate
Fastcache Quadra	PDS slot cache card	274	Comp W'house

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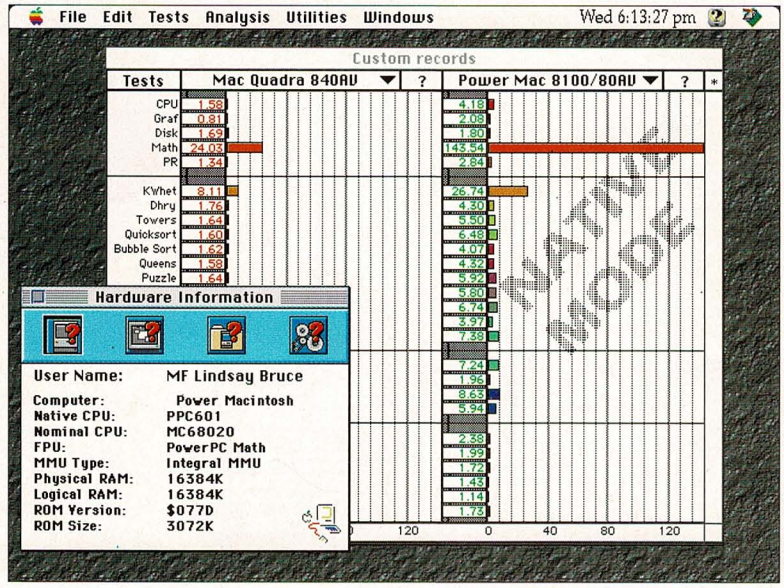
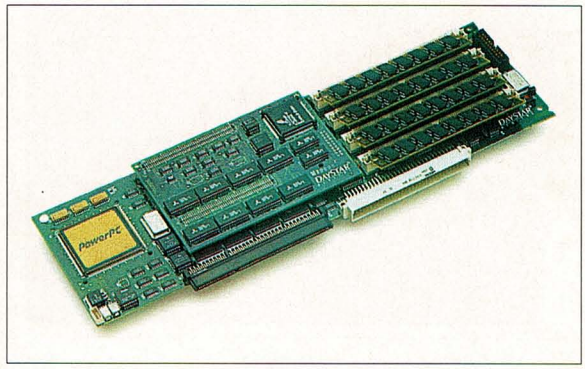


Compare your Mac's speed with other models using *Speedometer 4.0*, a benchmarking program that's on our Cover CD.



DayStar produces a comprehensive range of PowerMac upgrade cards. To find out if there's a card for your Mac, have a quick butcher's at the 'Give your Mac some Shredded Wheat' table starting on page 56.

size of the cache, but typically it's around 15 to 20%. Upgrade boards that have on-board RAM caches benefit greatly, because they don't have to access your Mac's memory bus through the relatively slow PDS slot as frequently.

Clock speed

All Macs and upgrade cards have a speed rating expressed in MHz (megahertz – millions of cycles per second). This is the clock speed, the speed at which your Mac's processor runs. You can think of the clock as being your Mac's heartbeat – everything happens in sync with it. The higher the number, the faster the clock speed, and the faster the processor runs. However, don't take this as a measure of power. A 33MHz 68030 processor is faster than a 25MHz 68030 processor, but a 33MHz 68040 processor is faster still because it has a superior architecture. Your Mac's overall speed – and that of any upgrade card – is determined by a number of factors including (deep breath) clock speed, processor type, whether it has a RAM cache on board, how fast data can be retrieved from memory, how fast data can be read from the hard disk, how quickly it can perform numeric calculations and how fast it display graphics on screen. The clock speed of a Mac or an upgrade board is only a rough indication of how fast the processor is – you can't compare different processors with the same clock speed.

FOR MORE INFORMATION

Apple: 0800 127753.
Computer Warehouse: 0171 724 4104.
MacRapide: 0181 381 4810.
Mygate Computing: 0800 132 591.
Xtal: 0181 421 8557.

HOW FAST? BLIMEY!

As you can see, there is a huge jump in speed when you upgrade to a newer processor – even at comparable clock speeds. The moral of the story? Don't always refer to clock speed; take processor type into consideration as well.

Mac	Processor	Clock speed	System Rating
PowerMac 7200/75	PowerPC 601	75MHz	288
PowerMac 6100/60	PowerPC 601	60MHz	246
Quadra 840AV	68040	40MHz	148
Quadra 660AV	68040	25MHz	104
Quadra 700	68040	25MHz	100*
Mac IIfx	68030	40MHz	59.7
Mac IIci	68030	25MHz	39.3
Mac II	68020	16MHz	23.3
Mac LC	68020	16MHz	14.7
Mac Plus	68000	8MHz	3.87

The test results were gathered using *Norton System Info*. The benchmark Mac here is the Quadra 700, which gets an arbitrary overall rating of 100%. Other results are expressed as percentages of how they compare with the Quadra 700. The overall system rating is an average response speed derived from a series of speed-related tests.

Model	Upgrades available	Price(£)	Contact
Quadra 900			
Sonnet Quadbooster	50MHz 68040 CPU replacement board	494	MacRapide
DayStar PowerPro 601	PowerPC 601 100MHz	1,057	Mygate
Fastcache Quadra	PDS slot cache card	311	Comp W'house
Quadra 950			
Sonnet Quadbooster	50MHz 68040 CPU replacement board	494	MacRapide
DayStar PowerPro 601	PowerPC 601 100MHz	1,057	Mygate
Fastcache Quadra	PDS slot cache card	311	Comp W'house
PowerMac 6100			
Mach 10 Jet	Clock chipping accelerator	81	Xtal
XLR8 Warp Factor 135	Variable clock chipping accelerator	105	Mygate
Afterburner MVP	150 MHz multi-processing card	TBA	Xtal
PowerMac 7100			
Mach 10 Jet	Clock chipping accelerator	81	Xtal
XLR8 Warp Factor 135	Variable clock chipping accelerator	105	Mygate
Afterburner MVP	150 MHz multi-processing card	TBA	Xtal
PowerMac 8100			
Mach 10 Jet	Clock chipping accelerator	81	Xtal
XLR8 Warp Factor 135	Variable clock chipping accelerator	105	Mygate
Afterburner MVP	150 MHz multi-processing card	TBA	Xtal
PowerMac 7200			
Logic board upgrade	Motherboard upgrade to PowerMac 7500	TBA	Apple
PowerMac 8500			
XLR8 Warp Factor 150	Variable clock chipping accelerator	105	Mygate
PowerMac 9500			
XLR8 Warp Factor 150	Variable clock chipping accelerator	105	Mygate

How to fit upgrades – see page 60

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- ❒ FREE POP3 E-Mail account.
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Doing it yourself

A slide show that takes you through four upgrades is on the Cover CD

With all those chips, boards, and scary grey metal things inside your Mac, where on earth do you plug any new bits in? Lindsay Bruce gets his pointy stick out...

By this time you should have a reasonable idea of what sort of upgrade or accelerator you need to make your Mac go faster. The only problem now is fitting it. Getting the lid off most Macs is easy enough and – provided you don't actually touch the insides of the machine at this point – it won't invalidate your warranty. Note, however, that there are certain cards which Apple specifies must only be fitted by a specialist Apple Authorised repair centre.

So once inside your Mac, how are you supposed to know which slot – among the sea of terrifying looking components – you plug the upgrade into? More to the point, where do you start? These walkthroughs take you through the necessary steps for some of the most common Macs. The principles here are the same for any Mac or PowerMac. Be careful handling the components, make sure your Mac is switched off *and* unplugged, and treat the insides of your Mac with respect.

ELECTRIC PERSONALITY

Why all the warnings about static? The static charges that can build up on your body just from walking around can run to thousands of volts. Because the current involved is very small, you hardly ever notice it, but to a tiny silicon wafer inside a computer chip this charge is lethal and will destroy its delicate circuitry. When handling computer chips and cards, you must be earthed via an anti-static wrist strap to drain all static charge away. You can get one from any good electronics shop.

UPGRADING THE IICI

Most Mac II models are similar and, with the exception of the original Mac II, they all share the same processor and similar cases. Most of the upgrade options that work in the IIci will work in any other Mac II model. Check with your dealer to find out which card is the right one for your model. In terms of power, the Mac II's are – sadly – on the borderline of being obsolete, which makes upgrading them rather expensive. There are several options for upgrading, including PowerMac, but bear in mind that these don't come cheap, and you may find a new Mac will cost you less in the long run.

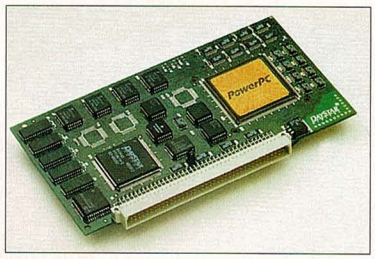
Upgrading a IIci – the recipe

You will need:

1. A MicroMac Carrera 040 or DayStar Turbo 601 upgrade card (or similar – ask your dealer)
2. Small crosshead screwdriver
3. Anti-static wrist strap
4. A cup of tea

1 Carefully read the section in your Mac's manual about fitting expansion cards. Carefully read the instructions that came with the card. Make prolific notes, and keep these and the manual beside you as you work. Most accelerator cards and upgrades require that you install driver software or an updated System version before your Mac can use them. This may be before or after you install the card – again, refer to the instructions that came with it.

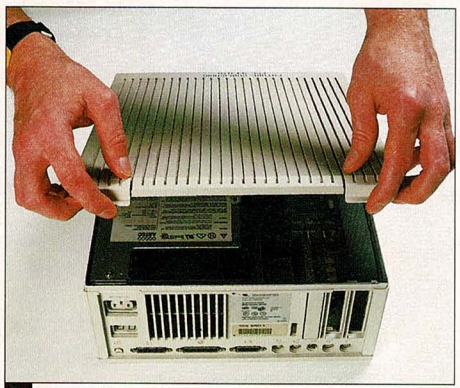
2 Disconnect all the cables from the back of the Mac. Now put on your anti-static wrist strap, attaching it to something that's properly earthed – for example, a radiator or cold water pipe. Most accelerator boards are supplied with disposable wrist straps – if you don't have one, you must get one from your local electronics shop. Don't try and fit the card without wearing one – the static charge from your body could destroy both the delicate silicon chips on the new card and those already in your Mac.



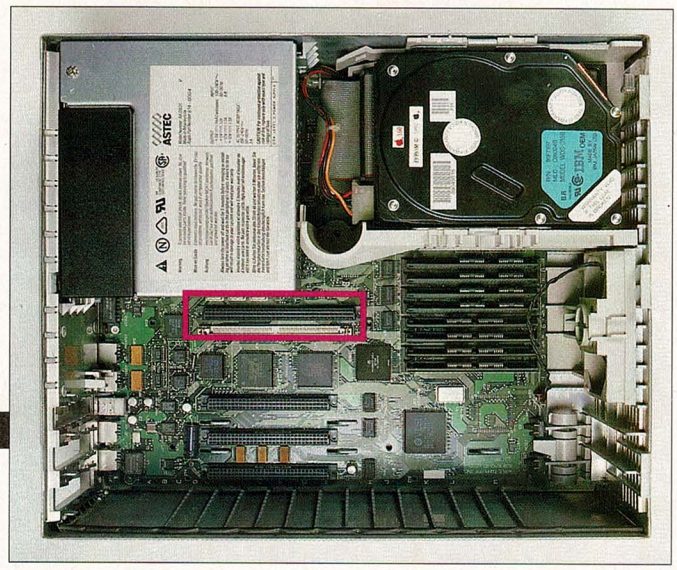
PowerMac upgrades for the Mac II series come in the shape of this card, the DayStar Turbo 601. It's not quite as fast as an off-the-shelf PowerMac, but pretty damn impressive nonetheless.

COMPACT MACS KILL?

If you own a Plus, Classic, or SE, then getting inside the case is not so easy. You need a special kit, available from most dealers, to open them up – but we do not recommend you try upgrading these Macs yourself. The built-in monitor carries massive electrical charges running to thousands of volts – even when it's switched off. This can kill you if you make a mistake. More recent compact Macs, such as the Performa 5200 and 5300, have slide-out motherboard drawers for easier upgrading.



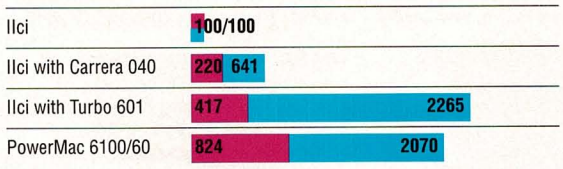
3 Unscrew the security screw at the back of the Mac and put it somewhere safe. Snap the two catches on the back of the IIci's lid upwards. Lift the top of the casing off from the back.



4 Once inside, inspect all of the slots for dust. Your Mac sucks in air using a fan, and over the years it can accumulate a lot of dust. If necessary, use a vacuum cleaner with a clean brush attachment to gently remove the dust from the expansion slots. Be gentle – your Mac is delicate. The PDS slot you're going to fit a card to is outlined in red here – it's the one next to the power supply unit.

HOW FAST ARE THEY?

We road-tested the MicroMac Carrera 040 accelerator and the DayStar Turbo 601 PowerMac upgrade in our office IIci. Both came with driver software and a Control Panel to disable the card, should you need an unaccelerated Mac for any reason. Both also came with detailed manuals describing the upgrade process and what to do if it goes wrong.

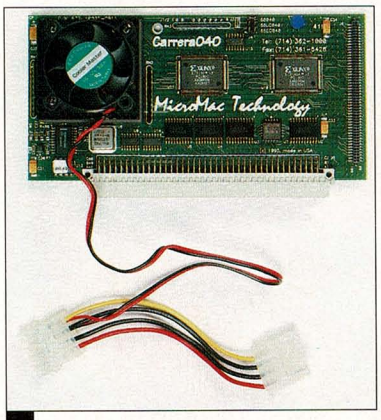


Mac	Disk	Video	Overall
IIci	100	100	100
IIci with Carrera 040	70	129	194
IIci with Turbo 601	69	170	322
PowerMac 6100/60	96	378	626

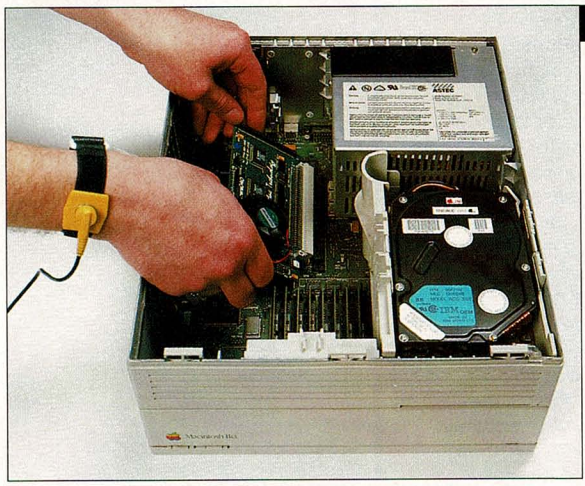
It's worth noting that the PowerMac upgrade card, although it runs at the same speed, does not give you the same processing power as a PowerMac 6100/66. This is because it needs the rest of the components on your Mac's motherboard to work, and these were never designed to run at anywhere near 66MHz. The card still has to use the same memory bus and input/output circuitry, so this effectively causes a bottleneck and slows your machine down.

The MicroMac Carrera 040 costs £704 and comes with manual, driver software, and disposable anti-static wrist strap. For more details contact MacRapide on 0181 381 4810. The DayStar Turbo 601 66MHz PowerMac upgrade for the Mac II series costs £704, and comes with manual, driver software and disposable anti-static wrist strap. A 100MHz version of the card is available for £998. For more details contact Mygate Computing on 0800 132591.

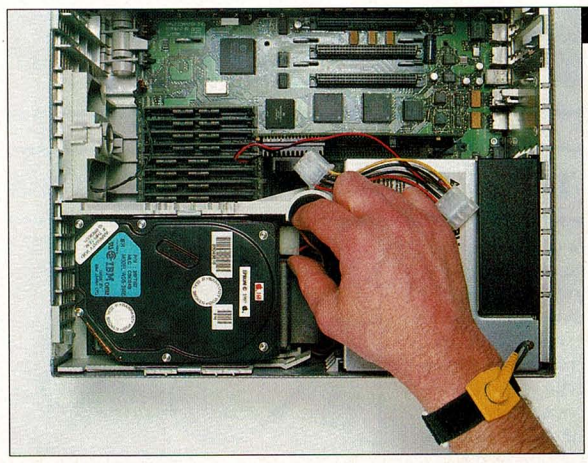
Note: Here, we've used an unadulterated Mac IIci as the benchmark. Each figure on the graph is expressed as a percentage of how fast each test was in comparison with the standard IIci.



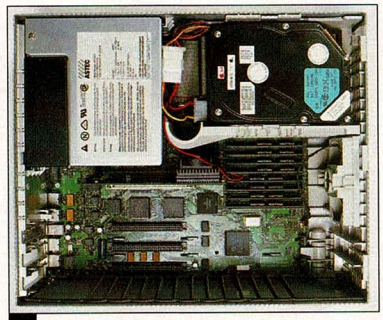
5 Unwrap the accelerator card from its anti-static bag. Hold the card by its edges, keeping your fingers away from the slot pins and the main components.



6 Get the card the right way round. In this case, the heatsink on the card should be facing your Mac's power supply. It will only fit in one way, so don't force it. Gently apply even pressure to the top of the card until it's pushed down into the slot.



7 If your card has an auxiliary fan, you need to connect this to the Mac's power supply. Carefully unplug the power connector from your Mac's hard drive – it's the big chunky white connector with four wires that you'll find on the back left-hand side of the drive. It's a solid connector, so you may find it easier to take the drive out first.



8 Once the power connector is free, plug it into the receptor on one end of the card's power wires. Then plug the other end back into the hard drive. The auxiliary fan will take its power direct from your Mac's power supply. The card itself is fed power from your Mac's circuit board, through the expansion slot.

Once you've followed the steps above, clip the lid back on top of your Mac and snap the two catches back down. Don't forget to replace the security screw. Plug all the cables back in and start your Mac up. Some upgrades, PowerMac upgrades in particular, change the Startup sound to a low pitched chord. If you hear one of these, it means you've successfully upgraded your Mac. If you don't, then don't worry – most cards use a Control Panel to switch the card on and off, for compatibility reasons. If you get a sad Mac, accompanied by a series of beeps, then something has gone wrong and your Mac's hardware has failed one of the Start-up tests. Don't panic. Go back to step one and make sure you've fitted the card properly.

If your card uses one of the aforementioned Control Panels, open it, turn the card on, and restart your Mac. Once it's up and running, drink the tea – assuming it's not gone cold – then try out your main applications to test for any compatibility problems. Some older applications might not work with PowerMac upgrade cards, so you should try and get the latest versions of all the programs you use most often.

ELECTRICITY KILLS!

We've shown you how easy it is to take the cover off your Mac, and we might even have mentioned that this act alone will not invalidate your guarantee. But, be warned: a computer is an electrical device like any other – a little more complex perhaps, but it still runs off a 13 amp mains plug. Be *very* careful about what you touch inside your Mac. Never take the lid off a Mac while it's plugged in.

WHAT'S A HEATSINK?

A heatsink is a large finned lump of metal. Its purpose is to disperse heat from electronic components into the surrounding air. The processor in your Mac gets extremely hot during operation and this heat damages electronic components, so has to be dispersed before it can cause damage.

Earlier Macs, such as the Mac II's, didn't all have heatsinks, but all PowerMacs and most Quadras have. If you want to know which chip in your Mac is the processor, it's a fair bet it's the one under the heatsink.

Continued on next page

Upgrading a 630

DON'T PANIC!

So your Mac won't start up, eh? Calm down, you've probably forgotten something daft, like plugging all the cables into the back. When you're fitting new hardware to your Mac, it's always a good idea to make a checklist of everything you disconnect or disassemble. Then, when you've installed the new hardware, just work backwards through the relevant bits of your list. Make sure all the connections are firm, and you haven't left any foreign bodies in there – like paperclips, chewing gum, or one of those funny plastic seals off the top of a milk bottle.

The Performa 630 isn't *that* old, and it's a very capable machine in its own right, but it's not a PowerMac. It was such a popular machine among Mac novices that many are now Mac gurus and want to upgrade it. We've had dozens of letters from such people, so, by popular demand, here's the definitive guide to making your 630 go faster.

The Performa 630's main drawback, along with most Performas and LCs, is that it doesn't have an FPU (Floating Point Unit) or maths co-processor – a processor that excels at doing mathematical calculations. This absence rules out 3D graphics and spreadsheets and, since these are becoming popular, Apple made the 630 one of the most upgradable Performas ever.

The 630 has the exceptional feature of having its main processor, the Motorola 68LC040, mounted in a socket so that it can be replaced. Both of the upgrades fitted in these examples use this socket rather than the LC-PDS slot on the motherboard, which makes upgrading the 630 a bit trickier than the IIci, but also means that the upgrade can bypass the original processor and therefore run as fast as possible.

The fastest non-PowerPC chip to be found in a Mac: the Motorola 68040. It's similar to the 68LC040 found in the Performa 630, but has an FPU built in.

First, a quick word of warning: the two 630 upgrades require you to remove the 630's processor from the motherboard – a tricky job that requires a special tool. If you have any doubts about your technical capabilities, get a professional to do the job for you. If you already know how to fit memory and expansion cards to your Mac, and are comfortable doing so, then this type of upgrade shouldn't present any special difficulties for you. If you're at all concerned, get someone who knows their stuff to do it for you – your dealer should do it for a small charge.

To remove the processor from your Performa, you're going to need one of these – a PGA Puller. This one's from DayStar and comes with the PowerCard 601 upgrade card.

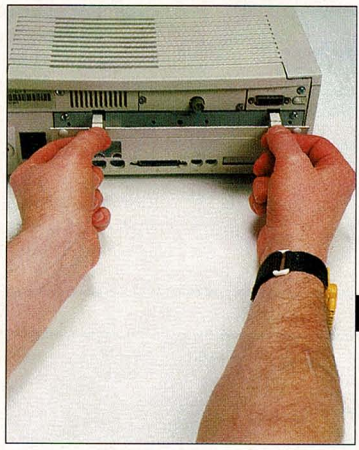
FITTING A 68040 TO A 630

One of the best things you can do for your Performa 630 is give it some number-crunching power. You do this by adding an FPU. The Motorola 68040 processor used in the Quadra has one of these built in, but the Performa's 68LC040 doesn't, so swap it for a full-blown 68040. The one thing to bear in mind is that when you buy a 68040 processor, you don't get the tools to fit it – you have to buy these separately. Again, you'll need an anti-static wrist strap, and also a tool called a PGA Puller. You can one of these from a good electronics shop for around £10, or by mail order from Maplin Electronics (01702 554161) and RS Electronics (01536 201201).

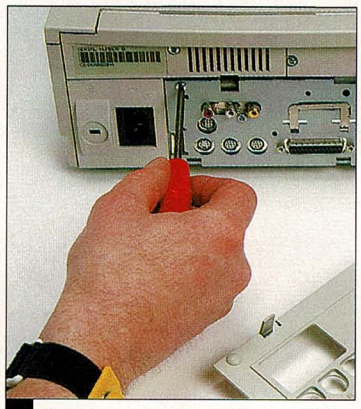
The full 68040 – the recipe

You will need:

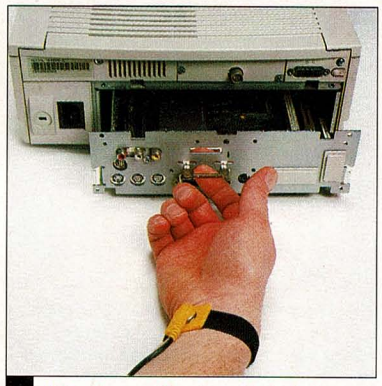
1. A full 68040 processor
2. Small crosshead screwdriver
3. Anti-static wrist strap
4. PGA Puller
5. Steady hands



1 Shut down your Performa 630 and unplug all the cables from the back. Have your Mac's manual to hand and make sure you've read all it contains about upgrading. Put on your anti-static wrist strap and attach it to something that's properly earthed – for example, a tap. Unclip the small plastic panel that covers the ports at the back of your 630.



2 Using a crosshead screwdriver, carefully remove the two screws that hold the motherboard drawer in place. Put them in a safe place – you'll need them later.

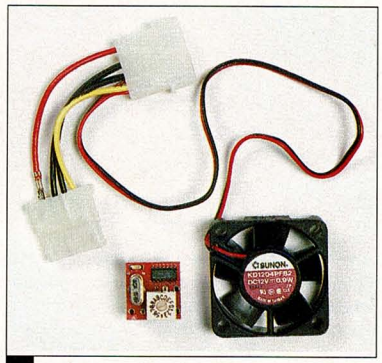


3 Using the small handle on the backplate, ease out the motherboard drawer. If it's stuck, don't yank it – a gentle wiggle does the trick. Completely remove it from the Mac's casing and put it on a clean, dry, *flat* surface.

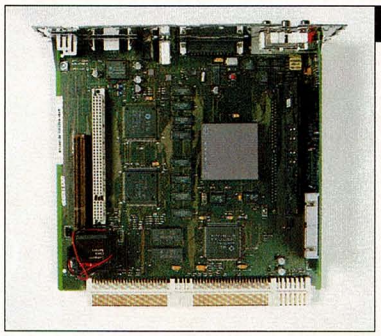
HOW TO FIT A CLOCK CHIPPING

If you own a Quadra or PowerMac, there's a good chance you can get hold of a suitable clock chipping accelerator for less than £100. This will boost the clock speed at which your Mac runs, and make everything that little bit faster. The speed increase depends on the model of your Mac and the brand of accelerator, but typical speed increases are in the order of 20 to 40%.

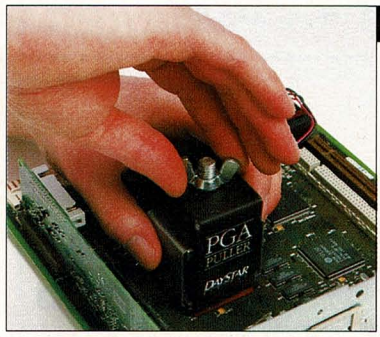
Observe the usual precautions when fitting a clock chipping accelerator. Unplug all the connections on the back of your Mac and make sure you're wearing an earthed anti-static wrist strap before you handle any components. Again, a disposable wrist-strap is usually supplied with most clock chipping accelerators.



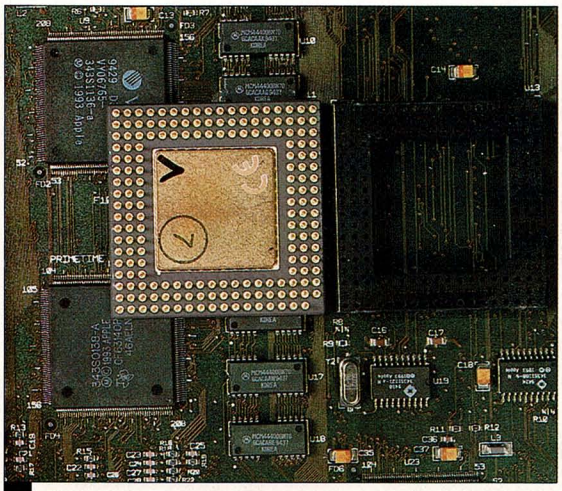
1 This clock chipping accelerator is from XLR8 (pronounced 'accelerate'). It will push your PowerMac 6100 from 60MHz to 80MHz – the same speed as a 7100/80. Simple maths proves you should be moving about 25% faster.



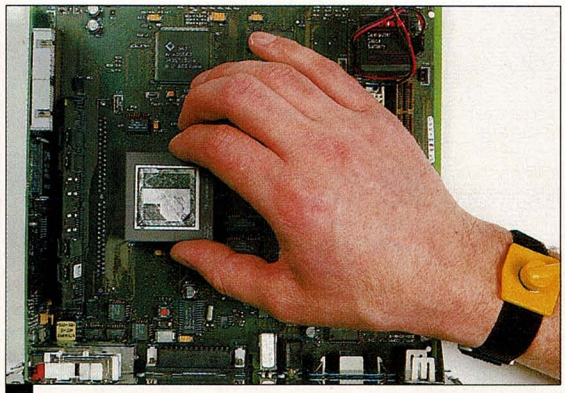
4 Take a few minutes to inspect the motherboard. The processor is the large square chip in the centre of the board in a socket, and is what you're going to remove. If the board is dusty, clean it with a soft brush, or use a vacuum cleaner with a clean brush attachment. Remove the new processor chip from its anti-static bag and place it somewhere handy, upside down so that the pins don't pick up any static. Keep the bag – you'll need it to put the old chip into, once you've got it off the motherboard.



5 Carefully fit the PGA Puller tool over the processor on the motherboard. You need to locate the flanges of the puller between the processor and the socket. *Don't* use a screwdriver to prise the chip up – you'll damage it. Once you've got the Puller in place, hold the sides of the puller into the chip to stop the flanges from slipping out. With your other hand, tighten the wing nut on top of the Puller. The tool will push against the motherboard and lever the processor out as you tighten the nut. Be careful not to scratch the board or damage the processor's epoxy casing. Once you've got the old processor out, pop it into the anti-static bag and put it away for safekeeping. It's worth a couple of hundred quid, and you might need it in the future.



6 Take a look at the new processor. You'll notice that the pins on the underside are arranged in three rows running round the edges of the chip. On one corner, there's a pin missing. You should find a corresponding missing hole in the socket on the motherboard. This is the key, and makes sure that you can only put the processor in one way round.



7 Carefully lay the processor over the socket and align the pins with the holes. Make absolutely sure you've got it the right way round. Gently and evenly, push down on the chip to locate the pins in the holes, then apply firmer pressure to make the connections. Do this carefully – you need to make a solid connection, but the last thing you want to do is break the pins on a £200+ computer chip. Push the chip all the way home to make sure it's properly connected.

Once you've followed these steps, you need to put your Mac back together. Align the motherboard with the slots in the back of your Mac and push the drawer home. You'll feel some resistance with the last quarter inch or so as the board slides into the connectors inside the Mac. Put the screws back in, tighten them up, then clip the plastic back panel on. Reconnect all the cables, including power and monitor. Start your Mac up. If it won't go further than the blank grey screen, the processor isn't fitted correctly. Switch off, go back and make sure it's in its socket properly.

You won't notice any difference to your Mac until you try running a program that requires an FPU. The processor isn't any faster in normal operation – it's only when you start throwing complex calculations at it that you'll notice a huge speed boost. To test your new FPU, try out some of the 3D programs from the MACFORMAT 34 Cover CD.

DON'T FORGET THE SOFTWARE

Nearly all upgrades and accelerators require you to install some software for your Mac to recognise them. This may be before or after you've installed the hardware, depending on what you buy. Make sure you read both your Mac's manual and the manual that came with the accelerator kit you've bought.

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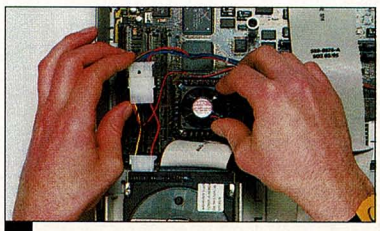
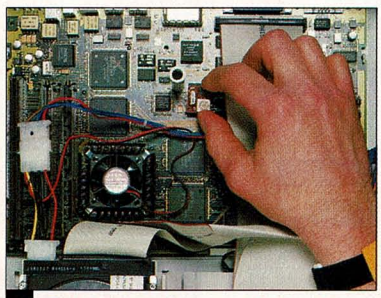
ACCELERATOR TO A QUADRA OR POWERMAC



2 Take the cover off your Mac and locate the processor chip. On PowerMacs, this will be under the large heatsink on the motherboard. You'll need to fit the accelerator's fan onto the processor heatsink – this keeps the processor cool at the higher clock rate. Pull the Out power connection from either the internal CD-ROM drive, if you have one, or the hard drive, and plug this into the fan's power connection. Plug the other end back into the either the CD-ROM drive or the hard drive – wherever you originally took it from.



3 Find the clock chip on your Mac's motherboard. The instructions that come with the accelerator will tell you exactly where it can be found. On nearly all Macs, it's a small chip with four pins that sits close to the processor. On the PowerMac 6100, however, it's to the right and slightly below the plastic peg in the middle of the motherboard.

4 There will be a small mark of some kind on the accelerator – a white line or similar; it varies from brand to brand – corresponding to a mark on the clock chip on the motherboard. Align these two marks and gently push the accelerator on top of the chip on the motherboard. Make sure it is seated firmly over the clock chip.

Once you've followed all these steps, put the case back on your Mac and plug everything back in. Once your Mac has started up, try out a few applications to make sure everything is running smoothly. Although clock chipping is a safe and cheap way of making your Mac go a bit faster, it's not a precise technology – mainly because each Mac is unique. All of the components used to build your Mac have what's known as a tolerance – a sort of error margin. The clock chip inside your Mac might say it runs at 66MHz, but it might actually be 66.8MHz.

Because of this, most clock chipping accelerators come with two clock crystals – one at the new clock rate (say, 80MHz), and one slightly below this (perhaps 78MHz). If your Mac simply won't work at the higher clock rate, you can try fitting the slower crystal. The clock chip fitted here is a variable one, so you can set the clock speed to the highest setting your Mac will cope with. This takes a bit of fiddling about, but might give you an extra few MHz.

UPGRADING A 630 TO POWERPC

If you want more power and more speed for everything, you can upgrade your Performa 630 to a Power-Mac using DayStar's PowerCard. The PowerCard has PowerPC 601 chip on it, as well as a socket for your existing processor. It's available in two flavours, 66MHz and 100MHz. Both come with detailed manuals and fitting guide, anti-static wrist strap, a PGA Puller, and a new set of Power-Mac-native System disks from Apple. Fitting it requires only a couple more steps than fitting a full 68040 to your 630 – want to see how it's done?

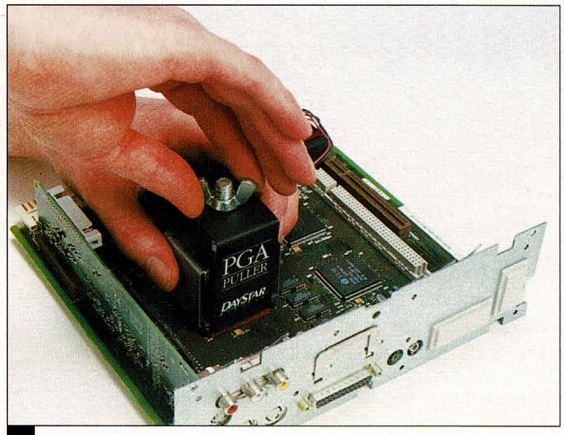
Performa to PowerMac – the recipe

You will need:

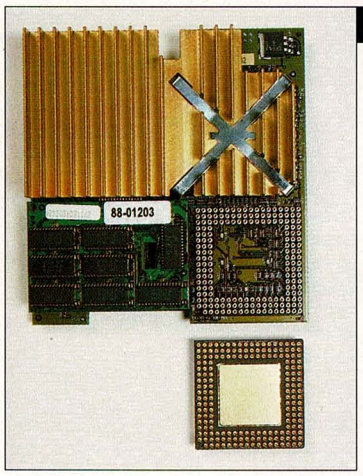
1. A DayStar PowerCard kit
2. Small crosshead screwdriver
3. Anti-static wrist strap
4. PGA Puller
5. No interruptions

Welcome to System 7.5
Your Macintosh needs certain software to start up in System 7.5.
The Installer places this software onto your disk in the System Folder.
The Installer will choose the software that Apple recommends for your Macintosh.
Choose "Custom Install" only if you are sure that you want to override those recommendations.
Continue...

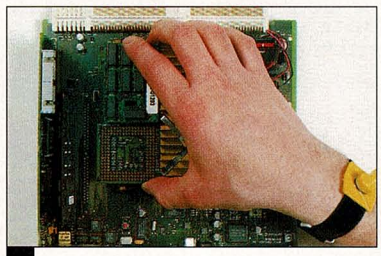
1 The PowerCard requires that you install the version of System 7.5 that comes with the card. Do this first, even if System 7.5 is already installed. The System disks with the PowerCard include the Control Panel you need, and, of course, you need a PowerMac-native version of the OS. The installer installs a System Folder that works either in PowerMac mode or 68K mode. You can customise this, but it's recommend you keep it, so you can start up with or without the PowerCard installed.



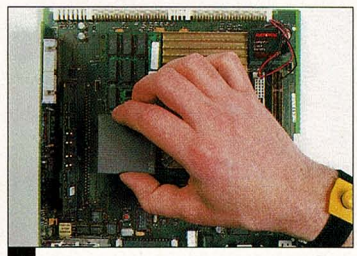
2 Follow steps one to six on fitting a full 68040 to your 630. The difference is that you need to keep the old processor, which you will fit onto the upgrade board.



3 Have a good look at the PowerCard. Next to the large heatsink – under which is the PowerPC 601 processor – is a socket to fit your old processor into. Like the processor, the pins are arranged in three square rows – with one missing from the outside row on one corner. This is your reference point. Again you need to align this with the same missing hole on the processor socket of your Mac's motherboard.



4 Lay the upgrade board on top of the motherboard's processor socket. You might find that the small battery which powers your Mac's PRAM gets in the way a bit. If so, unclip its power connection and remove it from the board. It's held on by Velcro, so it should come off easily. Making sure you've got the PowerCard the right way round – with the heatsink next to the LC-PDS slot on the motherboard – gently locate the pins on the underside of the board into the processor socket on the motherboard, then push down evenly on the card until it won't go any further. If you removed the PRAM battery, put it back. The connector only fits one way, and re-attaching it to the Velcro shouldn't cause you any problems.



5 Now you need to fit the old processor to the upgrade card. Carefully align the pins of the processor you've just taken out of your Mac with the holes in the socket on the PowerCard, noting the position of the missing pin on one corner of the underside of the processor and the corresponding missing hole in the socket on the upgrade board. The PowerCard uses a slightly different socket, which makes it easier to remove the old processor, should you need to in the future. Push gently down on the chip to locate the pins into the socket, then apply firmer pressure to complete the connection. Make sure it's securely in place.

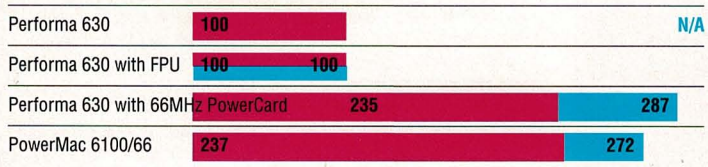
You're practically home and dry – all you need to do is put your Mac back together. Align the motherboard with the slots in the back of your Mac and push the drawer home. You'll feel some resistance with the last quarter inch or so as the board slides into the connectors inside the Mac. Put the screws back, tighten them up, and replace the plastic cover on the back of your Mac. Then plug everything back in and start your Mac up. If it refuses to co-operate, go back and make sure that both the upgrade card and the old processor are securely fitted. Also make sure you reconnected the PRAM battery.

If all goes well, your Mac should start up no problem, but not in PowerMac mode. Open the PowerCard Control Panel you installed back in step one and turn on the PowerCard. You may also have to reset your monitor setting and the date and time – this is a side effect of removing the PRAM battery. Now Restart your Mac.

As a result of the upgrade, your Mac should have rocketed through the start-up sequence. You can check that your Mac's in PowerMac mode by going to the **About This Macintosh...** box under the Apple menu: in the left corner, where it previously said 'Macintosh', it should now read 'Power Macintosh'. Lastly, proceed to play *Marathon* in full screen mode...

As with the IIci, the PowerMac upgrade for the 630 isn't quite as fast as the PowerMac 6100, even though they both use the same processor and clock speed. This is because the rest of the components in the 630 – particularly the video circuitry – are still working at the same speed as before the upgrade, and this tends to pull the overall speed increase down. Unfortunately, you won't get complete PowerMac performance unless you buy an off-the-shelf PowerMac.

CPU and FPU Performance improvements



Mac	Disk	Video	Overall
Performa 630	61	100	82
Performa 630 with FPU	100	100	100
Performa 630 with 66MHz PowerCard	93	90	170
PowerMac 6100/66	64	167	197

Here, a Performa 630 with an FPU is used as the benchmark. This is because there is limited FPU performance on a 630. Each figure is a percentage of how well the Mac completed the test compared to the Performa 630 with an FPU. The higher the figure, the faster the Mac.

WHERE TO GET THEM

The DayStar PowerCard 601 is available in two versions: 66MHz (£559) and 100MHz (£822). The full 68040 processor for the Performa 630 costs £234. For more details about these upgrades, contact Mygate Computing on 0800 132591.

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Apple Mac

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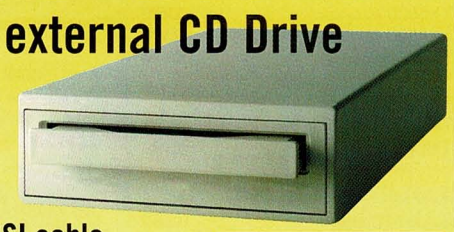

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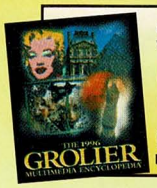

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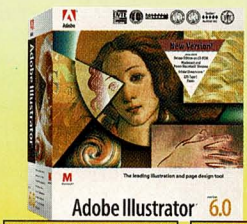

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Textures on the cheap

Creating interesting surfaces needn't cost loads of cash. A copy of *Color It!* and this tutorial are all you need. Brian Larkman shows you how to add texture.

MISSING

If you missed any of the back issues of MACFORMAT mentioned in this tutorial, turn to page 121 to order your copy.

You can always tell when something's computer generated – all those smooth plastic surfaces and careful gradients are a dead giveaway. Now, though, surface texture and pattern have found their way into almost every image, adding realism and disguising the origins of even 3D computer games. You can now create these effects and textures for yourself, without the trouble or expense of dedicated software, merely by making careful use of *Color It!*

Follow this tutorial and you won't need specialist programs like *KPT, Virtus Alien Skin Textureshop, Specular TextureScape,* and *Adobe TextureMaker* – all of which produce brilliant textured surfaces but all of which cost around £100. With a little work, and a copy of *Color It! 2.3.5* you can reproduce many types of 2D pattern or 3D embossed texture. Go ahead! MF

WHERE TO GO

- *Color It! 2.3.5* was given away on the MACFORMAT 31 Coverdisk. You can upgrade to 3.0.4 for just £49.95. Turn to page 120 for further details.
- *Adobe Photoshop 3.0.5* costs £737.90. For more details contact Principal on 01706 831831.
- *Adobe TextureMaker* costs £116.32. Contact Adobe on 0131 451 6888.
- *Kai's Power Tools 3* costs £151. Contact MetaTools on 0181 744 9912.
- *Specular TextureScape 2* costs £143. Contact Gomark on 0171 731 7930.
- *Virtus Alien Skin Textureshop* costs £92.82. Contact Principal on 01706 831831.

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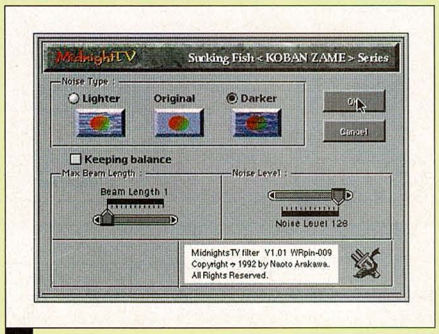
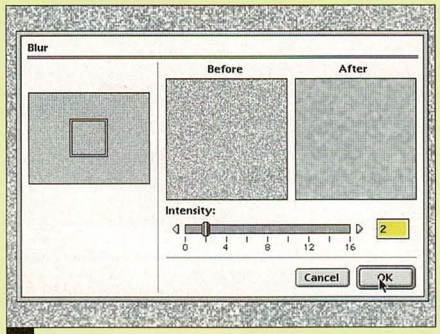
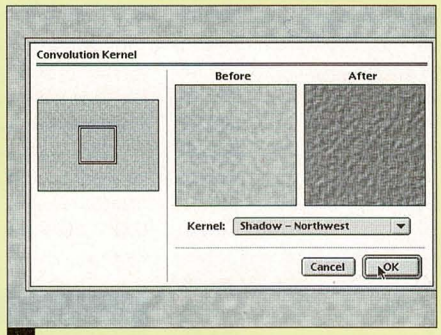


1 To overcome *Color It! 2.3.5's* lack of **Noise** filter, you can adapt one of the *Sucking Fish* plug-ins – MidnightsTV – included on the MACFORMAT 27 and 31 Cover Disks. This effect introduces TV interference over an image. However, if the line length is set to one pixel, the effect is of a normal **Noise** filter. Here, the **Noise** level was set to 128 – the maximum – but experiment to see what effects you can achieve using other settings.



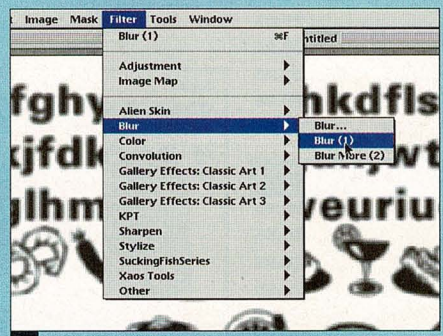
2 *Color It!* provides an excellent **Blur** filter with proper previews that enable you to check effects before you apply them. For this tutorial try a level 8 **Blur** – but again, experiment with other settings to achieve different effects. This **Blur** gives a smoothly contoured but non-directional bump-map that you could use in a 3D program (though this basic texture is supplied in most packages).



3 *Color It!* does have a very good **Convolution** function, which you'll find easier to use than *Photoshop's.* The screen above demonstrates what the effect looks like. All the filters are displayed and, as usual, it is well worth playing around to discover all that it can do. For this tutorial, just select **Shadow SE** to cast shadows to the lower right (south east) of your image. Save the result as **CrackleMask**.

TEXT AND PATTERN EMBOSSING

1 You can also produce surface textures using black and white patterns or objects. Create interesting shapes by drawing your own, as shown in the **Pattern** palette here; by using text, as shown in the main window; or, if you can get them, by using clip art fonts such as Zapf Dingbats or the Mini Pic's Lil' Edibles font (supplied with *Dabbler 2).* You can use any of these on a larger scale as the basis of 3D relief logos, using the same technique as described for textures here.

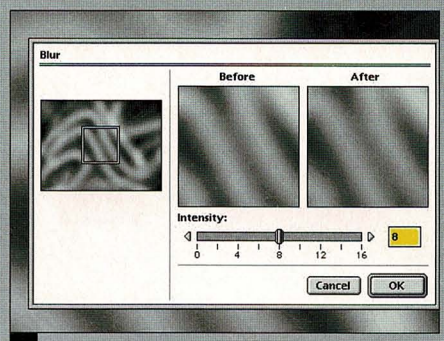


2 If you add **Blur** to a texture – whether random dots, painted patterns or text – you soften the edges and remove aliasing. Usually this enables you to construct masks that are much smaller than the final image. It's then a simple matter to use the **Image Size** function to enlarge them to the size of the final picture when you need to. If you use a light **Blur** (around two pixels) for these finer patterns, you can avoid losing too much detail.

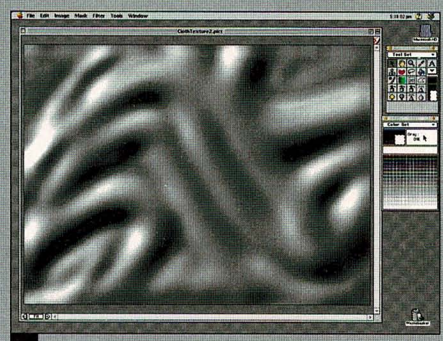
3 *Color It!* gives you two levels of shadow – **Normal** and **Heavy** – and eight main directions. If you experiment with the **Convolution** function you can vary both size and direction to suit, though this is rather hit-or-miss with no previews, and the defaults are adequate for most needs. Here we've used **Heavy Shadow SE**.

CLOTH FOLDS

1 One of the commonest ways you can add life to an image is to make any paper and fabrics within it appear to have folds and bends. You can make fold masks simply with an **Airbrush** set to 10% Flow and 15/sec. Spray a series of related white curves onto a black background like those shown here – vaguely parallel, but not too close. Don't worry too much about their evenness, because the image will be blurred. Broad, flat brush marks give a more 'creased' effect.

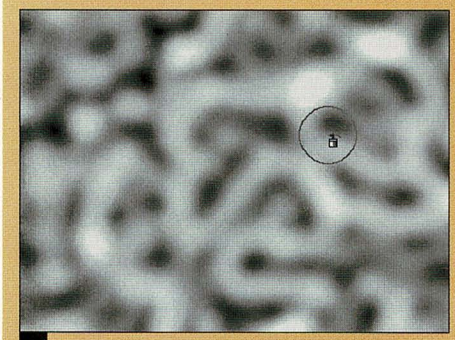


2 For folds to look smooth, a high level of blurring is needed – you should find 10 to 15% in *Color It!* sufficient. If you used broad flat lines for creases, you may need to apply the **Blur** filter twice. Generally, the **Blur** filter produces the effect of a 45 degree slope on flat brush marks, so you'll have to experiment to get a good effect. Stick with the **Airbrush** initially – it produces a more curved profile when blurred.

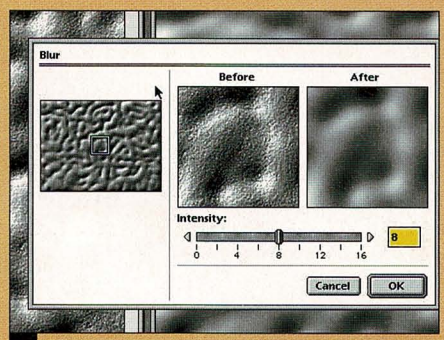


3 Shadows are applied – as in the third step of the Crackle Finish walkthrough – with the **Shadow Kernel** of the **Convolution** filter. If you have sprayed over all of the black background and not over-sprayed to a bright white, you must use **Heavy Shadow** to produce any noticeable effect – especially if you intend to apply this mask to a detailed textured image, which might obscure the folding effect.

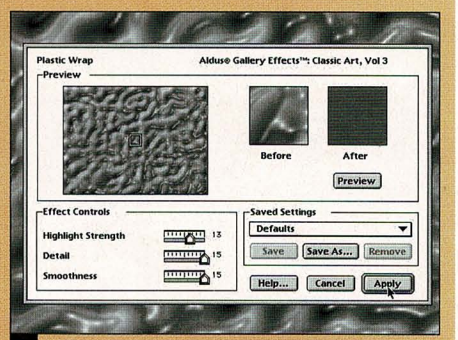
'ALIEN SKIN' / VISCERAL BLOBS



1 A very popular style of texture, originating with *Virtus Alien Skin Textureshop* (now also by *KPT 3),* is the *Alien Skin* or visceral blob look. You can also create this easily using *Color It!* Start with a series of blobs, holding down the **Airbrush** tool continuously, stopping in one place for a while then moving (still holding) and stopping again (still holding). Practise blending these blobs together at their edges to create a surface tension meniscus-style effect.



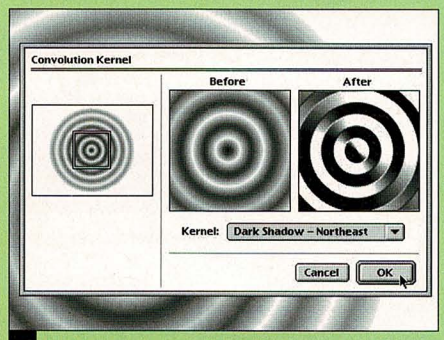
2 For once, you should apply **Blur** and **Shadow** in reverse order. Experiment with the amount and direction of shadow first – **Heavy SE** is probably best to keep the skin folds separate. Next, experiment with the level of smoothness you want for the skin. You don't have to use a **Blur,** but here a level of 8 was used to create a slick surface. You can apply any other level.



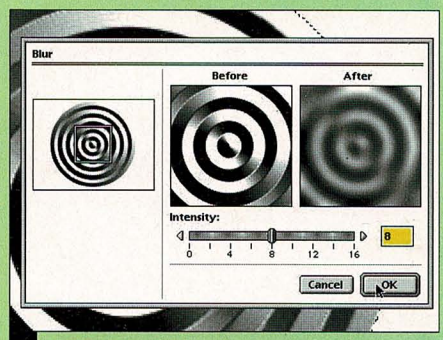
3 Although the blobby and deep shadowed look is effective, for a really 'intestinal' look you need to apply the *Adobe Graphic Effects* Plastic Wrapper plug-in, which we included with *Color It! 2.3.5* on the MACFORMAT 31 Cover CD. Almost any setting can look good, so experiment a little. Here the **Detail** and **Smoothness** are set high, but the **Highlight Strength** is set lower to avoid overwhelming the image completely.

CREATING RIPPLES

1 *KPT 1.0 Gradient Designer* creates a concentric ring ripple, which you can constrain to a shaped area. Set preview to **Concentric Sunburst,** drag bracket out to both ends of gradient bar, hold pointer down on the left end colour and drag to black on the pop-up palette. Set other end to white, and you get 'damped' ripples. Reduce bracket to about one eighth of the width, move to left end, and set centre colour to white. Drag bracket one eighth to the right and repeat until the gradient is complete.



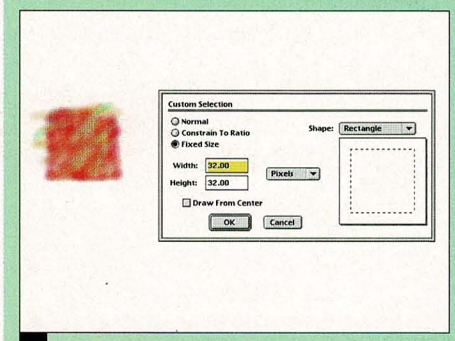
2 In this case you should add shadows before blur. **Heavy SE** or **NW** will give you a conventional look with deep ripples, but the actual direction should be suited to the light direction in the final image. If you have used a **Selection** to constrain the effect, 'drop' it by typing **[command] [D]** before you apply the shadow – this will ensure that the whole mask outside the ripple is a neutral (zero height) grey.



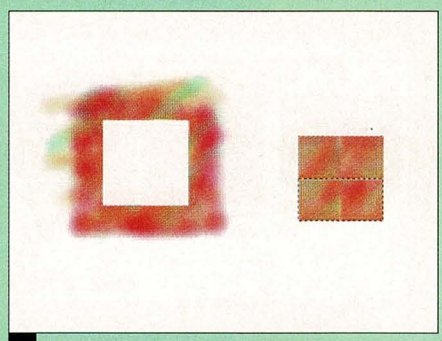
3 *KPT Gradient Designer* produces unrealistic, straight-sided ripples after you apply **Shadow,** so you must also use substantial amounts of **Blur** – assuming, of course, you're trying to create smooth, liquid ripples. A setting of 8 was used in this example.

Continued on next page

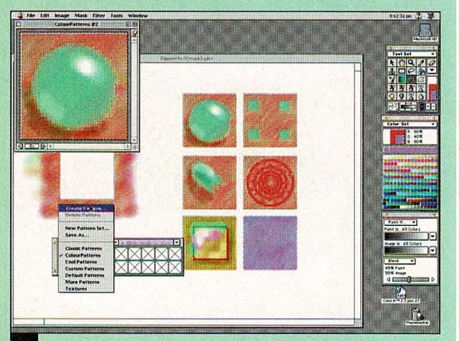
SMOOTH REPEATING PATTERNS



1 *Color It!* provides a small selection of patterns and textures, some of which are in colour and are seamless, but if these don't match your requirements it's easy to create more. First paint a pattern or abstract form, using any tools or colours you wish. Choose the **Custom Selection** tool and set it to **Fixed Size Rectangle** (32, 16 or 8 pixels square). Select an area of the pattern you have just created to use as a tile.

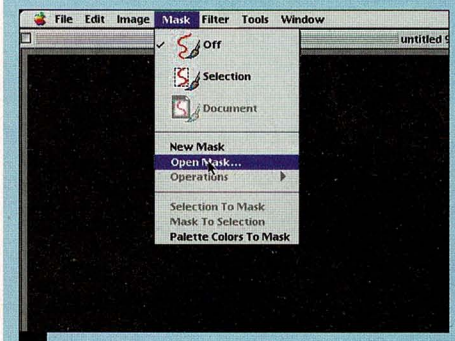


2 Copy the section of pattern you want to use as a background. You need to make it seamless, so you can repeat it in both directions. Change the **Custom Selection** tool to half its previous height (32 x 16, 16 x 8 or 8 x 4) and swap the two halves of the full tile over – top with bottom – making sure you line them up carefully. Repeat this process again for the left and right hand sides of the pattern. Using the **Smudge** and **Airbrush** tools set to a very small radius, blur the join lines inside the new tile. Don't change the outside edges – here the pattern on the tile is required to accurately blend with adjoining tiles.

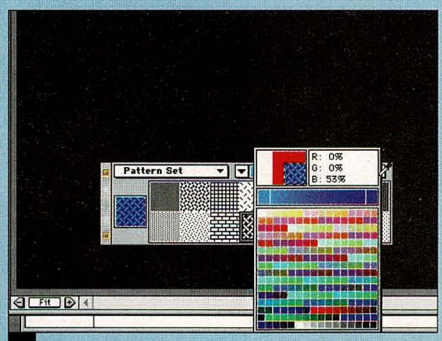


3 You can use this tile immediately, but some foreground effect may also be required, as shown here. Once the tile is perfect, set the **Custom Selection** tool back to the full size (32 x 32, 16 x 16 or 8 x 8), select the tile outline again, and copy it to the Clipboard. In the **Pattern** window, use the menu to make a **New Pattern Set.** Click on an unused pattern 'well', choose the **Create Pattern** option, accept the default pattern-type in the dialogue and paste the contents of the Clipboard – your pattern – into the pattern window that opens. Save the pattern that you have just created.

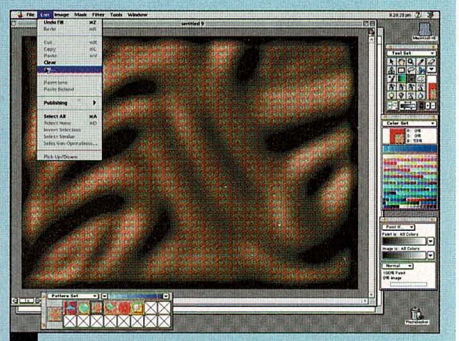
APPLYING TEXTURE TO FLAT SURFACES



1 Once your masks are all created and saved, you can start work on an image. If you're going to apply the mask to flat colour, a repeat pattern or a texture, you need to fill the screen with black first, for the transparent shadow areas of the mask. Open the mask from the **Mask** menu – it'll be automatically converted to the right format, selected as the current **Document mask**, and activated.



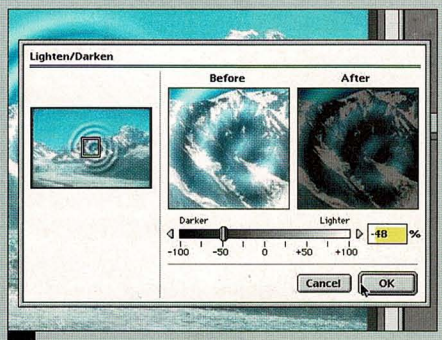
2 Select the colour or pattern you require from the **Pattern** palette. If you're using a simple pattern, you can set the colours using the two swatches above the patterns. Click on the arrow and drag down to the colour you require. Repeat the step for the contrasting colour. If you're using a custom pattern, select that as the fill.



3 To fill with the pattern selected, you just have to pull down the **Edit** menu and choose **Fill.** Accept the default setting, and your pattern will appear, bump-mapped with your chosen mask. If you think it looks like the wrong scale, check that the image and mask are the same size using the **Image Size** function.

APPLYING TEXTURE TO PICTURES

1 If you want to apply the mask to a picture, load them both as normal, and choose the mask as the active **Document Mask.** It is obviously not possible to do a fill of the screen with the image, so the mask is applied in other ways, as you can see in the next step.



2 To apply the mask use the **Lighten** and **Darken** functions on the **Filter/Adjustment** menu. First use **Lighten.** Drag the slider to around 50% and click **OK.** Invert the mask (**Mask/Operations/Invert**) so that the transparent areas you previously used to lighten the image become opaque, and the newly transparent areas can be used to darken the rest of the image. Darken using the **Filter/Adjustment... Lighten/Darken** function.

3 The final image can look very effective, but you'll find it impossible to properly distort the original in the way a real ripple does – only the lightness is changed. If you want the majority of the original picture to stay the same, the area around the ripples must be set to black (transparent) for both the **Lighten** and **Darken** operations. This could be done if you only apply the mask in a circular selection to create a single ripple. Otherwise correct using **AutoContrast (Filter/ Adjustment/AutoContrast).**

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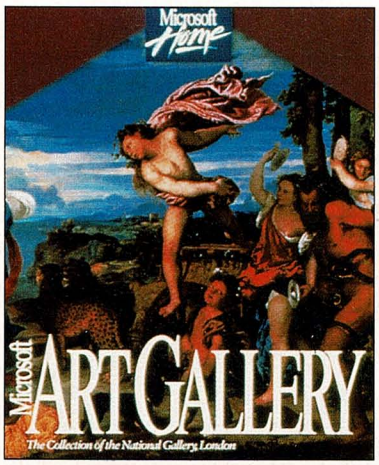

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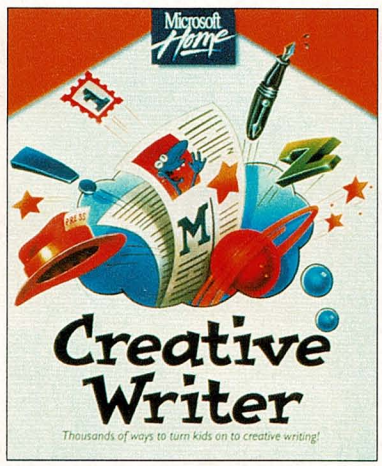

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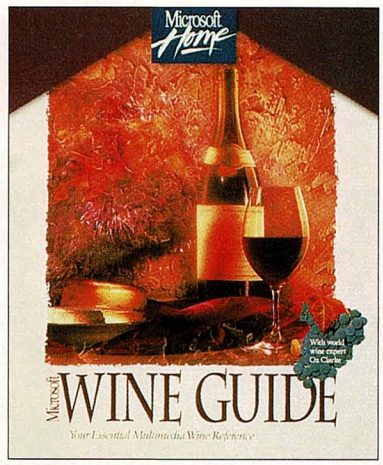

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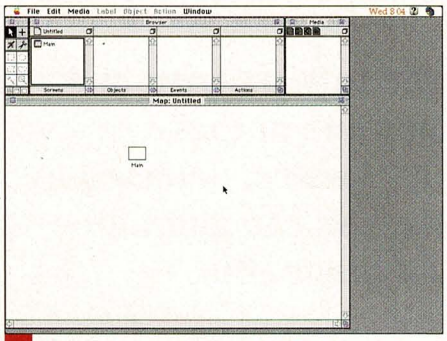
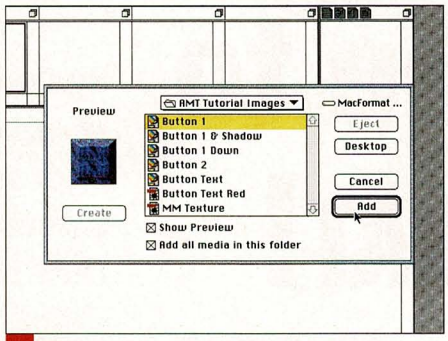
Buttons and highlights

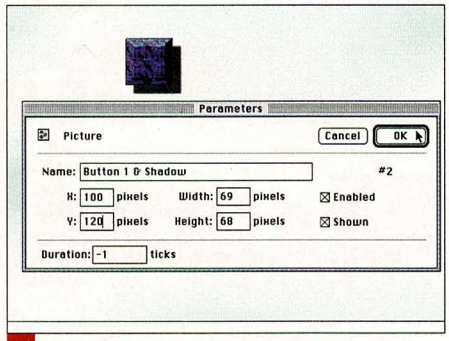
Having introduced you to *Apple Media Tool* last issue, Colin Dalziel shows you how to animate your buttons.



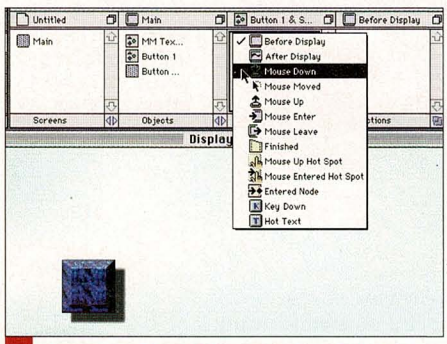
1 After you've opened *Apple Media Tool*, choose the **Creation** tool from the toolbox and click once in the Map window. This will make the screen you're going to use to place the buttons. Name the screen 'Main'.



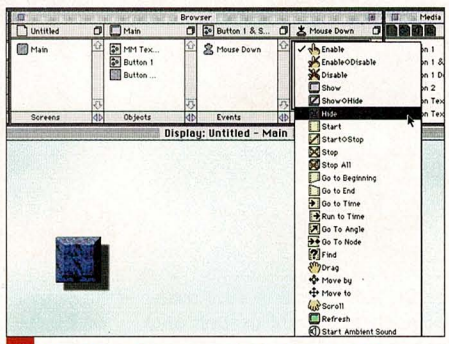
2 Next you need to import the media for the work ahead. Insert this issue's MACFORMAT Cover CD in your CD-ROM drive. From the **Media** menu select **Add**, find the AMT Tutorial Images on the Cover CD and import all the images. Then double-click on the **Main screen** icon in the Map window to open the Display window.



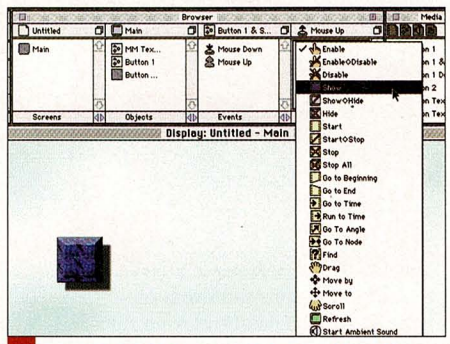
3 Drag the MM texture icon from the Media mini window into the Display window. The coloured texture will fill the window. To add the first button drag the **Button 1 & Shadow** icon from the mini window into the Display window. Double-click on the button and type 100 for the X position and 120 for the Y position.



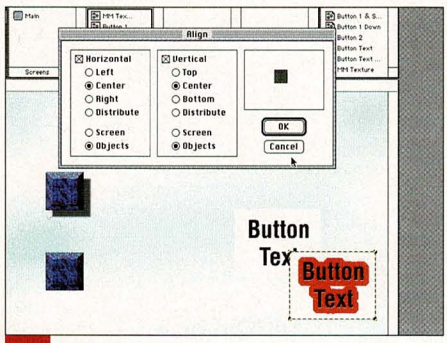
7 Now you need to add the events, to make the buttons change. With the shadow button selected, double-click in the Events mini window. This will bring up the **Before Display** option. Click and hold on this and select **Mouse Down** from the menu that appears.



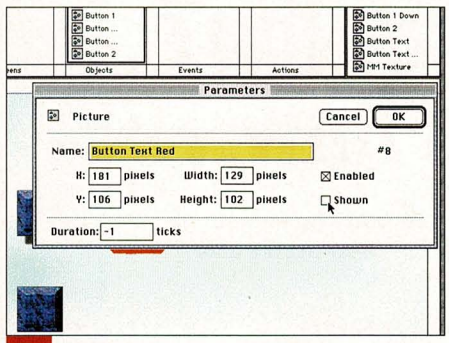
8 With **Mouse Down** selected double-click in the Actions window, click and hold on the **Enable Itself** option, then select **Hide** from the pull-down menu. This makes the shadow button disappear and display the other button. Next you need to make it reappear when you release the mouse button.



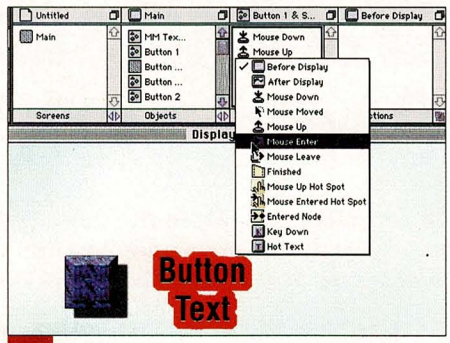
9 Repeat step 7 but instead of selecting **Mouse Down**, select **Mouse Up**, then repeat step 8 but this time select **Show** instead of **Hide**. You now have your first active button. Select **Run** from the **Window** menu and click on the button to see the simple animation.



13 The final effect is to highlight certain text when the cursor moves over a button. Drag the text and red text icons from the Media mini window onto the Display window. Align the two text items using the **Align** option in the **Object** menu. Now position the text next to the top button you created earlier.



14 Make the text items' backgrounds transparent, as you did in step 4. Hide the text with the red border, by double-clicking on the red text image and deselecting the **Shown** check box from the **Parameters** dialogue box.



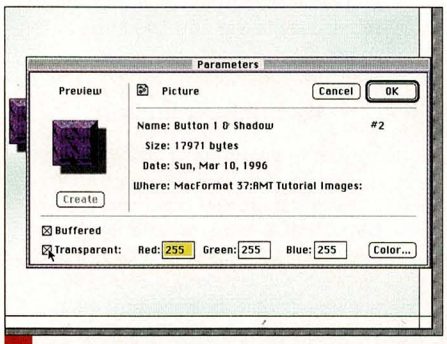
15 The next step is to make the red text appear when the cursor moves over the button. With the button selected in the Objects mini window, double-click in the Events window to add a new event. Click and hold on the new event and select **Mouse Enter** from the pull-down menu. Double-click in the Actions window, then click and hold on the new event, selecting **Show**.

Last issue on our Cover CDs we gave you the very latest in multimedia creation software, *Apple Media Tool 2.0*. As if that wasn't enough, we also gave you a tutorial showing how to create your own multimedia presentations.

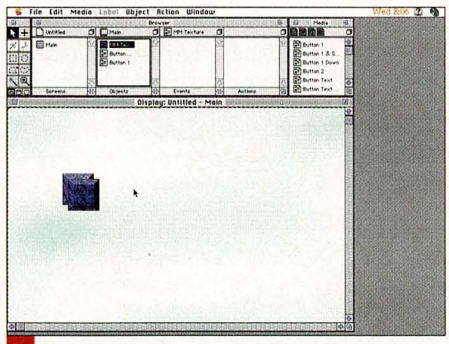
This issue we take a look at different ways to create buttons for your users to interact with in your multimedia presentations. You can use this style of button in any multimedia production to help the user navigate between screens. We also look at a way of highlighting an area when the mouse moves over it – showing the user which area is active and clickable.

All the buttons and text we've used in the examples on these pages were produced using *Color It! 2.3.5*, which we gave away free on the MACFORMAT 31 Cover CD. **MF**

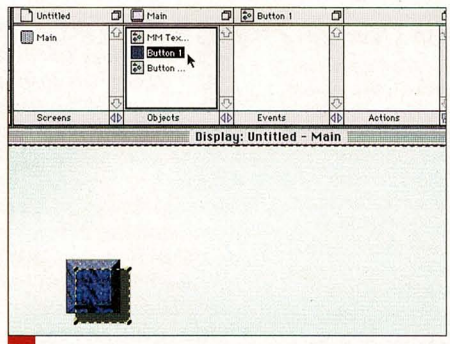
Apple Media Tool was on last issue's Cover CD – see page 121 to order a copy



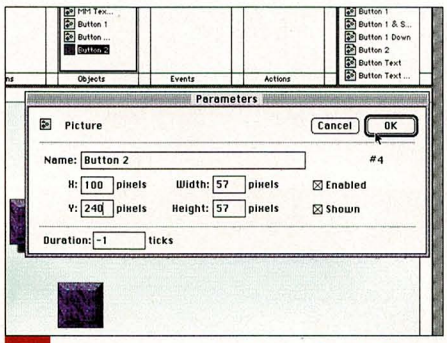
4 You need to change the background area of the button from white to transparent to look more natural. Double-click on the **Button 1 & Shadow** icon in the Media window and select the **Transparent** option, which is available in the **Parameters** dialogue box.



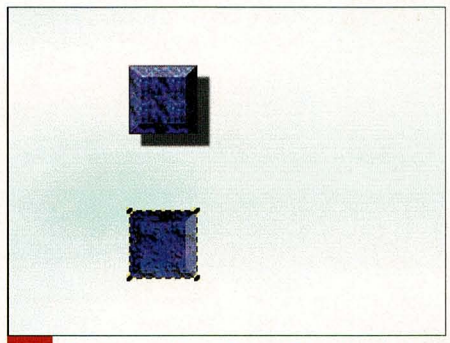
5 To animate the button when it is clicked on, drag the Button 1 icon from the Media mini window to the Display window. Align the button with the shadow of the button you placed earlier. You will be able to see both buttons, one on top of the other.



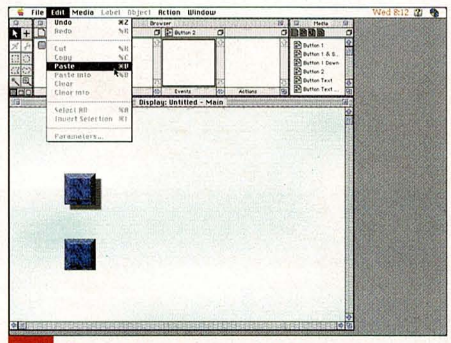
6 Now you need to hide the second button. In the Main screen mini window there are three icons, one for each object. The icon at the top of the list is always at the back of the scene. To move the second button behind the first simply drag its icon up the hierarchy in the mini window. The top button will then hide the other.



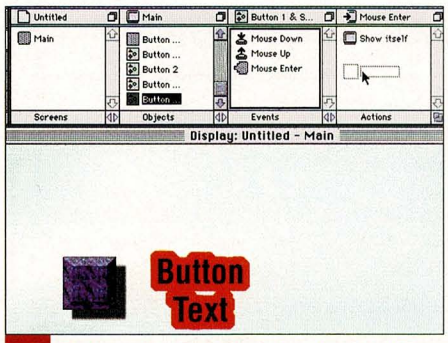
10 Next, add another style of button. Drag the Button 2 icon into the Main Display screen from the Media mini window. Double-click on the button and position it so it aligns with the first button by typing 100 X and 240 Y.



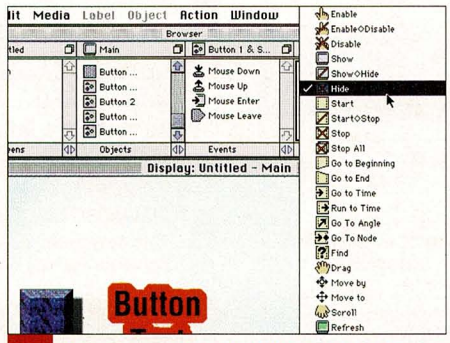
11 Do the same with the Button 1 Down icon, placing it in the same position by typing 100 X and 240 Y in the dialogue box that appears when you double-click on the button. The second button appears on top of the first. Move the second button behind as you did in step 7.



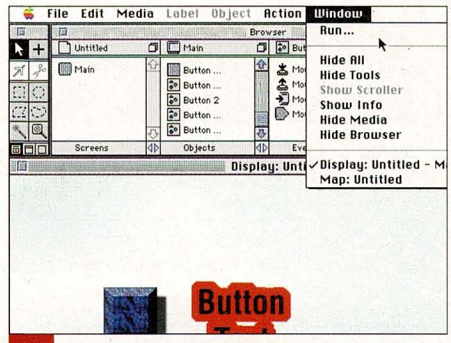
12 The scripting is the same as before, so simply cut and paste the commands. Select the **Button 1 & Shadow** icon in the Object mini window, then select **Copy** from the **Edit** menu. With the Button 2 icon highlighted and the Event mini window selected, choose **Paste** from the **Edit** menu. This copies all the scripts attached to the button, which you can now run.



16 To change the object being shown from 'itself' to the text surrounded with red, drag the red text icon from the mini Object window onto the Show icon in the Action mini window. To hide the other text image, double-click in the Actions mini window, click and hold on the new event, then **Hide**. Drag the Button text icon from the **Object** mini window onto the Hide icon.



17 Repeat step 16, but select **Hide** instead of **Show**. You also need to replace **Hide Itself** with the Hide button text, which you do by dragging the button text icon from the mini Object window onto the Hide icon in the Action mini window. To reverse the sequence for when the cursor moves away from the button, add a Mouse Leave event just as you created the Mouse Enter event.



18 The final touch is to reverse the show and hide options you made earlier, so the red text is hidden and the plain text shows when the cursor moves away. Select **Run** from the **Window** menu and click away on your first animated buttons. You can use these types of buttons to link screens, play sounds and show QuickTime movies in your multimedia extravaganzas

Seek the knowledge

How on earth can you ever find what you want on the unruly mess that is the Internet? Richard Baguley goes in search of the true path of knowledge.

ALTA VISTA

The Alta Vista search engine runs on several machines, including an AlphaStation 250 4/266 with 4Gb disk and 256Mb of memory (which handles in excess of 2 million Web accesses a day) and a 64-bit AlphaServer 8400 5/300 with 210Gb RAID disk, 6Gb (yes that's gigabytes, not megabytes) of memory and 10 processors. Yow. Mind you, they probably got them cheap – Alta Vista is run by Digital Corporation, who design and build the Alpha workstations.

The World Wide Web is full of information. In fact, it's too full. There is no accurate count of the number of Web pages out there, but it's well into the millions, and new pages are being added every second. Given that there is this amount of stuff out there, how do you find the things you need? You use a search engine, that's how...

A search engine is a glorified database held on a machine connected to the Net. It enables you to search the list of pages it holds for a specific word or phrase. This doesn't require a special program or any programming skill: all you need is a Web browser that supports forms (such as *Netscape* or *Netshark*). You enter the word you want to search for, click a button, and the search engine comes back with the entries that contain the magic word.

To skulk, to search...

It seems simple but, like most things in life, there is a lot more to it than meets the eye. The programs that do the searching are getting extremely sophisticated, with files holding millions (or, in some cases, billions) of words and URLs. Many of them also allow complex search operations.

Of course, a search engine without anything to search would be pointless, so one of the most important aspects of running a search engine is how it finds new pages. Although they all allow information on pages to be added by users, this isn't enough. Instead, most rely on programs called Robots, whose sole purpose in life is to skulk around the Web looking for new pages. When they access a page, they'll check all the links on that page for anything that isn't in the search engine. If they find a new link, they move over to the new page and add it to the list.

My hobbies include...

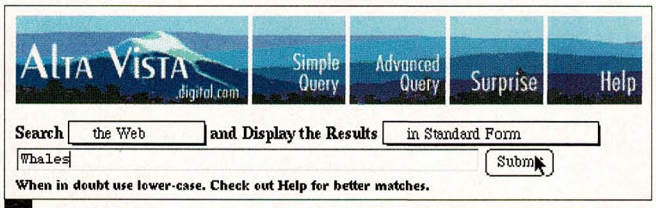
So you've gone onto a search engine and decided to look for pages on your current hobby. You enter something broad like 'fishing' or 'goat stroking' and a few seconds later it comes back with a list of Web pages. The only problem is that it comes back with several thousand: far more than you could ever look through in a single

WHERE'S THE MONEY, MATE?

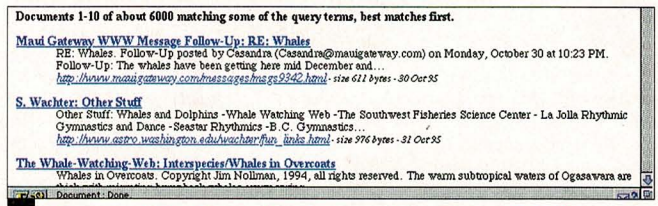
All of the search engines mentioned in this article are free to use. Some offer additional services for a charge, but the basic search is free on all of them. So how do they make any money? The answer is simple: advertising. Practically every page you access when doing a Web search will have an advert of some form stuck on the top of it.

The company that runs the search engine can charge big bucks for this space; after all, the ability to present your advert to several million well-off people every day is the sort of thing to make people in advertising agencies fall over and make funny noises...

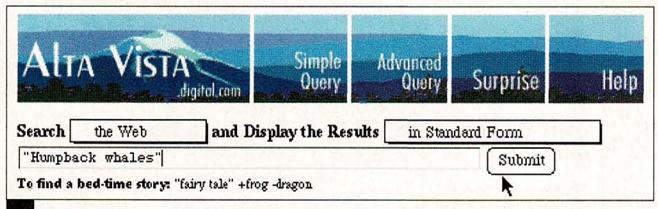
SEARCHING FOR STUFF



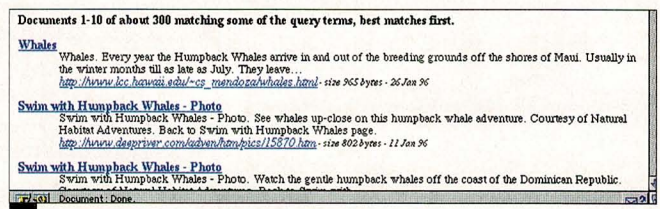
1 You're happily browsing, and you get a sudden craving to watch a few Humpback whales. What do you do? You do a Web search! First try searching for 'whales'...


Documents 1-10 of about 6000 matching some of the query terms, best matches first.
Maui Gateway WWW Message Follow-Up: RE: Whales
RE: Whales. Follow-Up posted by Casandra (Casandra@mauigateway.com) on Monday, October 30 at 10:23 PM.
Follow-Up: The whales have been getting here mid December and...
http://www.mauigateway.com/messages/msgs9342.html - size 611 bytes - 30 Oct 95
S. Wachter: Other Stuff
Other Stuff: Whales and Dolphins -Whale Watching Web -The Southwest Fisheries Science Center - La Jolla Rhythmic Gymnastics and Dance -Seastar Rhythmics -B.C. Gymnastics...
http://www.astro.washington.edu/wachter/fun_links.html - size 976 bytes - 31 Oct 95
The Whale-Watching-Web: Interspecies/Whales in Overcoats
Whales in Overcoats. Copyright Jim Nollman, 1994, all rights reserved. The warm subtropical waters of Ogasawara are
Document: Done

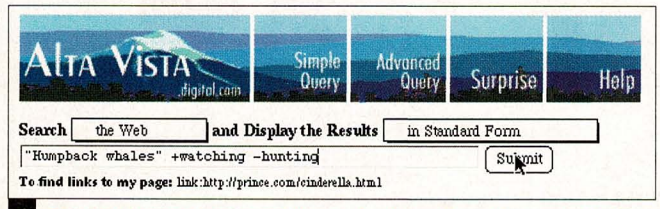
2 A few seconds later, the search engine comes back with about 6,000 Web pages which mention whales. Oops. Time to narrow the search a bit...



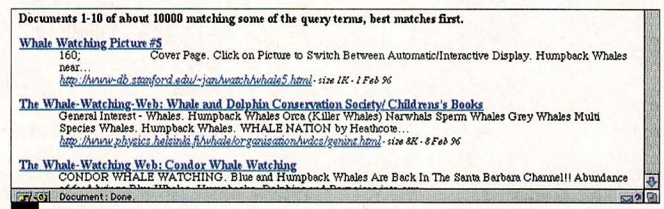
3 Let's try narrowing the search to 'Humpback whales'. After all, not all whales are Humpback whales. There are Sperm whales, and... and... other whales.


Documents 1-10 of about 300 matching some of the query terms, best matches first.
Whales
Whales. Every year the Humpback Whales arrive in and out of the breeding grounds off the shores of Maui. Usually in the winter months till as late as July. They leave...
http://www.lcc.hawaii.edu/~cs_mendoza/whales.html - size 965 bytes - 26 Jan 96
Swim with Humpback Whales - Photo
Swim with Humpback Whales - Photo. See whales up-close on this humpback whale adventure. Courtesy of Natural Habitat Adventures. Back to Swim with Humpback Whales page.
http://www.deepriver.com/adventure/pics/15870.htm - size 802 bytes - 11 Jan 96
Swim with Humpback Whales - Photo
Swim with Humpback Whales - Photo. Watch the gentle humpback whales off the coast of the Dominican Republic.
Document: Done

4 That's better – only 300 pages matching the query conditions. They aren't all to do with whale watching, though. Hmm.



5 The Alta Vista search engine enables you to add conditions: this search will also look for 'watching' but ignore pages that include 'hunting'.


Documents 1-10 of about 10000 matching some of the query terms, best matches first.
Whale Watching Picture #5
160; Cover Page. Click on Picture to Switch Between Automatic/Interactive Display. Humpback Whales near...
http://www-db.stanford.edu/~jan/wwatch/whale5.html - size 1K - 1 Feb 96
The Whale-Watching-Web: Whale and Dolphin Conservation Society/ Childrens's Books
General Interest - Whales. Humpback Whales Orca (Killer Whales) Narwhals Sperm Whales Grey Whales Multi Species Whales. Humpback Whales. WHALE NATION by Heathcote...
http://www.physics.helsinki.fi/whale/organisation/wdcs/genint.html - size 8K - 8 Feb 96
The Whale-Watching Web: Condor Whale Watching
CONDOR WHALE WATCHING. Blue and Humpback Whales Are Back In The Santa Barbara Channel!! Abundance
Document: Done

6 That's more like it. You now have a list of several pages that are specifically about whale watching. I'm off for a swim...

sitting. That's the problem with the Web today – there's simply too much information on it. In the early days of the Web, a search of this type would have only come back with a few pages, but most single word searches these days come back with hundreds or thousands of pages, many of which only vaguely relate to the subject.

As you might expect, there are ways around this: either narrow down your search or use some of the search tools that the engine provides.

Narrowing down the search is done by giving the engine more information to work on. For instance, instead of simply entering 'fishing', try searching for 'piranha fishing in the Thames'. The engine will come back with fewer pages as a result, but they are more likely to be relevant to the subject.

You should also remember that, by default, most search engines allow a certain amount of leeway: words close to the one you are searching for will also be included, although lower on the list of results. So, if you search for fishing, you'll also get some pages which may include 'fushing' or 'foshing'. With something as multilingual as the Web, you'd be surprised at the results you get sometimes.

AND OR NOT NEAR?

Most search engines also enable you to apply conditions to your search. Although the specifics of this vary from engine to engine, almost all support basic operations such as AND and NOT. If you use them properly, they can be incredibly useful. For instance, searching for 'fishing' AND 'bait' will supply a list of pages that include both the words fishing and bait. A search for fishing NOT whaling will put pages that mention whaling at the bottom of the list.

There are various other options, but these tend to vary from one search engine to another. For instance the Alta Vista search engine has the condition NEAR, which searches for words within a hundred words of each other on a Web page.

This variation from engine to engine can be a problem. There is no standard, so you have to find out how to use the powerful search functions each engine provides. Probably the best thing to do is to find one that you like, experiment with it and use that for most of your searches.

Many of the bigger search engines now enable you to search through Usenet news articles as well as Web sites, and an increasing number also offer indexes of Web sites, sorted by category. Some have even started offering reviews of Web sites.

There are a lot of excellent search engines out there (see the box below for a few places to start), each of which has its own strengths and weaknesses. We'd recommend the Alta Vista site as a good place to start, but it's a question of finding one you are comfortable with and finding out how to get the most out of your Web searches. **MF**

The problem with the Web today is that there's simply too much information on it...

YAHOO!

The Yahoo! search engine started out as a way for David Filo and Jerry Yang to organise their own personal favourite Web sites. Yahoo is supposed to stand for 'Yet Another Hierarchical Officious Oracle'.

OTHER RESOURCES

You can also search for files or information held in other places on the Net. If you're searching for files to download, use a system called Archie. It uses special servers which, like Web search engines, regularly move around the Net, downloading lists of files from FTP sites. These are then stored on a large database, which you can search using an Archie client such as *Anarchie*. We gave this away on the MACFORMAT 32 CD, or you can download it from **ftp://src.doc.ic.ac.uk/packages/mac-sumex/_Communication/tcp/**. Before the Web existed, most information on the Net was stored using Gopher, which is similar to the Web but lacks the graphics and isn't as easy to use. Much information is still stored on Gopher servers, and you can access it using *TurboGopher*, which we gave away on the MACFORMAT 34 CD. Or you can download it from the site mentioned above, which includes all sorts of useful comms packages.

FIVE TOP TIPS

1. Make your search unique. Instead of looking for a broad title like 'fish', try searching for something more specific, such as 'fishing for piranha'.

2. Use conditions. Most search engines enable you to specify conditions such as AND or NOT. These can be used to further narrow your search by trying searches such as 'piranha NOT goldfish'

3. Try multiple searches. No one search engine is going to have every Web page indexed. Many have different methods of looking for pages, which means that some may come up with different results from the same search.

4. If there is a Usenet newsgroup for the subject you are searching for, think about asking in there or checking the FAQ (Frequently Asked Questions).

5. Choose your time carefully. Although most search engines run on very fast computers, there is a limit to how many queries they can handle at any one time. As with most things Internet, many of them are in America, so it's usually best to try and pick a time when America is still gently snoring in bed.

SEARCHING FOR A SEARCH ENGINE

Yell! http://www.yell.co.uk/
Run by the Yellow Pages people, this site comprehensively lists UK Web sites by category. Also covers non-UK sites.

Alta Vista: http://altavista.digital.com/
Claims to have over 8 billion words on over 16 million Web pages indexed. And who are we to argue?

Infoseek: http://www.infoseek.com/
Another of the original search engines, offering an extremely powerful selection of search tools.

Opentext: http://www.opentext.com/
Offers two levels of searching: simple and power. Power-search has a vast number of options, but is confusing to use.

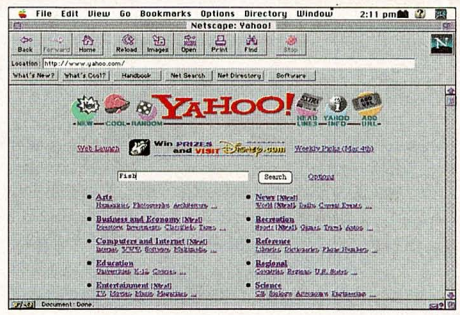
Lycos: http://www.lycos.com/
A powerful search engine that recently started offering Web site reviews, as well as an index organised by category.

Excite! http://www.excite.com/
Over 1.5 million pages and reviews of 50,000 Web sites.

Starting Point: http://www.stpt.com
Not a search engine itself, but enables you to search for your keyword or phrase on 17 other search engines.

WebCrawler: http://Webcrawler.com/
Run by online service America Online, this engine deals with an average of 2.7 million queries a day.

What's new too! http://newtoo.manifest.com
Again not really a search engine, but an excellent resource for finding new sites. It holds announcements for new Web sites which you can search.



Yahoo: http://www.yahoo.com/
One of the original search engines, and the one that really sets the trends. Now on Netscape's computers.

Global on-line Directory: http://www.god.co.uk/
Marketed under the phrase 'GOD Knows', this search engine concentrates on European sites.

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Power Mac 7500/100 16/1000CD	1942
Power Mac 8500/120 16/2000CD	2973
Power Mac 9500/120 16/1000CD + 2Mb ATI Video Card	3242
Power Mac 9500/132 16/2000CD	3229
Power Mac 9500/132 16/2000CD + 2Mb ATI Video Card	3475
Power Mac 9500/132 16/2000CD + 4Mb ATI Video Card	3559

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630 8/500 CD & keyboard	743	924	
630 8/500 Plus II CD & keyboard	780	830	1037
630 12/500 CD DOS & keyboard	958	1160	1191
6200 8/500 CD Plus II & keyboard	849	1069	1125
6200 8/800 CD Plus & keyboard	929	1109	1152
6200 8/500 CD Plus II Video-in-TV & keyboard	857	1075	1133
6200 8/800 CD Plus II Modem & keyboard	899	1117	1175
6300 8/1200 CD Plus & keyboard	1144	1315	1358
5200 8/800 CD Plus & keyboard			1152
5200 8/800 CD Plus Modem & keyboard			1174
5200 8/800 CD Plus Modem, Video-in-TV & keyboard			1194
5300 8/1200 CD Plus Modem & keyboard			1479
5300 8/1200 CD Plus Video-in-TV, MPEG & keyboard			1893
5300 16/2000 CD Modem, Video-in-TV, MPEG & keyboard			1932

Plus II bundles include the following software

Installed Solution Software - At Ease, Mavis Beacon Teaches Typing, Claris Works 3.0 Milie's Math House, ClickArt, Performa 7.5 System Software, eWorld, SpinDoctor, Hypercard Player, SuperMaze Wars, MacGallery, Thinkin'Things 2.

Included CDROM Software - Asterix Language, Rediex, Concertware, Rock Rap & Roll, Dorling Kindersley 'The Way Things Work', Snoopy CD, EA 3D Atlas, Daedelus Encounter, Grolier's Encyclopaedia, Making Music CD, Myst.

In adition, modem equipped configurations ship with 'Personal Communications Solution', and TV configuations are supplied with 'Avid Videoshop' and Apple VideoPlayer'.

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Ocean Life Hawaii, Return to Zork, Warren Miller, Wild Africa.

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Powerbook 190cs 4/500	1245		1372
Powerbook 190cs 8/500	1452		1580
Powerbook 5300 8/500	1403		1563
Powerbook 5300c 8/500	2338	2657	2468
Powerbook 5300c 16/750	2848	3167	2968
Powerbook 5300cs 8/500	1755	2088	1920
Powerbook 5300cs 16/750	2216	2535	2351
Powerbook 5300ce 32/1100	4336		4500
Powerbook Duo 2300c 8/750	2320		
Powerbook Duo 2300c 20/1100	3026		

Key: GS = Greyscale, PM = Passive Matrix, AM = Active Matrix

Powerbook Duo Mini Dock	239	Powerbook Duo 2300 DuoDock Plus	639
Powerbook PCMCIA Expansion Module	105	Powerbook 190 Infrared Kit	36
Powerbook Duo battery	59	Powerbook 190/5300 AC adaptor	39
Powerbook 190/5300 NiMH Battery	119	Powerbook Duo AC Adaptor	45
Powerbook 5300 Video Adaptor	19	Powerbook Standard Carry Case	20
Powerbook Business/Designer Carry Case	40		

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		1 yr	2 yr	3 yr
Group 1	StyleWriter II,1200,2200 & Portable, ImageWriter, QuickTake	15	55	92
Group 2	Scanners, CD-Rom Drives, Monitors up to 16", Colour StyleWriter 2400, Personal, Select & 4/600 Lasers	15	84	126
Group 3	Performas, Powerbooks (except 5300), LaserWriter 16/600 Monitors over 16",	15	99	165
Group 4	PowerMacs, Workgroup Servers, Colour LaserWriters	15	135	220

MEMORY

	4Mb	8Mb	16Mb	32Mb
72 Pin SIMM PMac, Quadra, Perf 475/630/5200/6200	49	89	179	355
Powerbook 520, 520c, 540, 540c	99	245	390	
Powerbook Duo, 150	149	249		
Powerbook 190, 5300	179	279	505	899

	1Mb	2Mb	4Mb	6Mb	8Mb	16Mb
Personal Laserwriter 320		82		229		
Laserwriter Select 300/310	65		165			
Laserwriter 16/600			145		260	520
Laserwriter Pro 630			150			

DIMMs Memory	4Mb	8Mb	16Mb	32Mb	64Mb
7200, 7500, 8500, 9500	89	99	229	329	1089

Video RAM	256k	512k	1Mb	2Mb (for ATI)
	13	19	45	120

Secondary Cache Memory	256k	512k	1Mb
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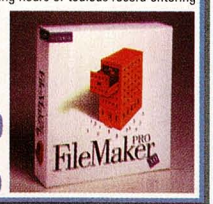

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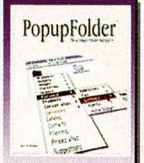

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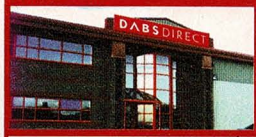

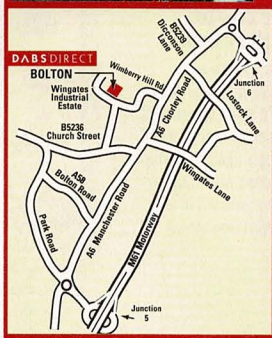

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THE LANSBURY ESTATE
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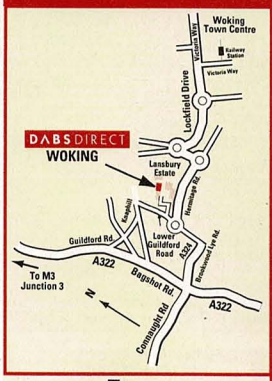

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Power to the people

ClarisWorks' powerful macros are simple to create and a doddle to use, yet they're greatly underutilised. Derek Smith explains how to get the most from them.

You might already have read our enthusiastic review of *FileMaker Pro 3* on page 92. The *ClarisWorks* database module is very similar in design, but lacks some of the more sophisticated features – such as the ScriptMaker, which automates tasks. You can, however, achieve almost the same power and flexibility as *FileMaker Pro 3* using *ClarisWorks'* macro facilities.

A macro is a recording of keyboard and mouse actions, whether typing, highlighting, or selecting from pull-down menus. For example, you could record yourself typing your address, then assign a keyboard shortcut to it. Every time you press the keyboard shortcut in future, your address appears just as if you had typed it again.

Create a macro in one of *ClarisWorks'* modules and it's available in all the others. But they are often only of module-specific use – a macro to create a bar chart is of little use in the word processor module. They can even be specific to a particular document.

Once you've recorded it, you can play a macro by choosing **Play Macro** from **Shortcuts**, under the **File** menu. Alternatively, you can press a predefined keyboard shortcut, or click an icon on the floating **Shortcuts** palette (choose **Show Shortcuts** from **Shortcuts**, under the **File** menu).

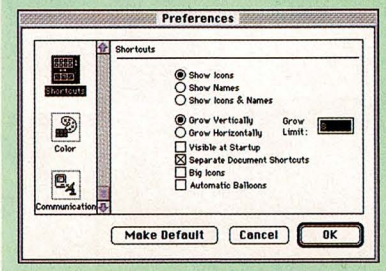
Not only can a well-constructed macro save you time, you can create them for other users, to perform complex tasks that otherwise would require a lot of training to demonstrate.

Here we look at three scenarios in which you can use macros in the database module to get advanced effects.

NOT ONLY, BUT ALSO

Although this tutorial covers *ClarisWorks*, the principles are equally applicable to other database programs, especially *Microsoft Works*.

PREFERENCES



There are several very useful preferences that affect the way you view and use the shortcuts floating palette. To see and change your preferences, choose **Preferences** from the **Edit** menu, then click the **Shortcuts** icon.

If you choose to view shortcuts by icon, consider changing the Horizontal Grow Limit to around 30. This creates a long thin bar, similar to that in *Microsoft Word*, which you can place at the top or bottom of the document.

You can choose whether to view the shortcuts by name or icon. Viewing them by name can be easier than trying to work out what is meant by an icon of a piece of paper with an arrow pointing at it! it does take more space than icons, however, which is significant if you have a small monitor.

KEYBOARD SHORTCUTS

If you assign a keyboard shortcut to a macro that only works in a specific document, you can use the same keyboard shortcut for another macro in a different document.

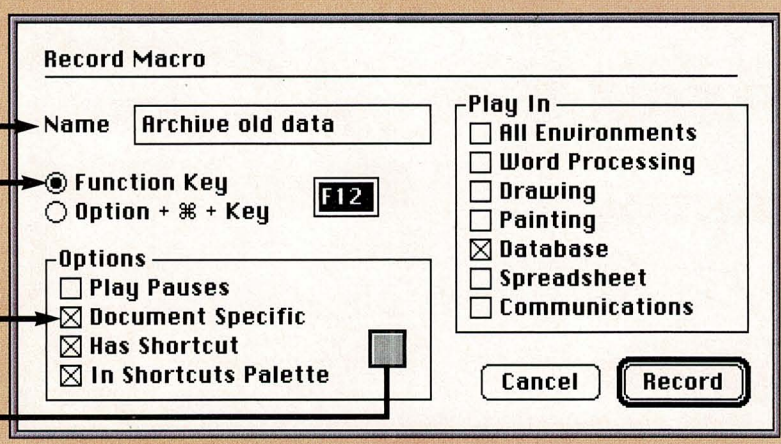
SETTING UP A MACRO

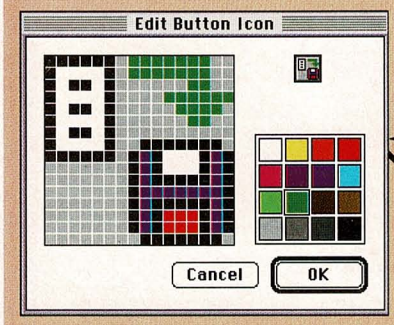
To set up a macro you always start by choosing **Record Macro** from **Shortcuts** under the **File** menu. You will see the following dialogue box.

Allocate a keyboard shortcut. If you have an extended keyboard, you can use the function keys along the top.

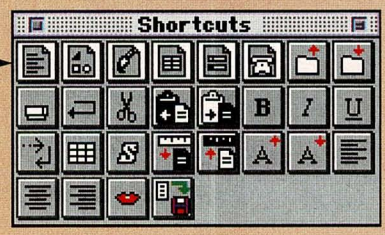
Give it a meaningful name, so you'll recognise it later.

For macros like the ones we are about to create, you'll want to make them document specific – they would be useless in any other database.





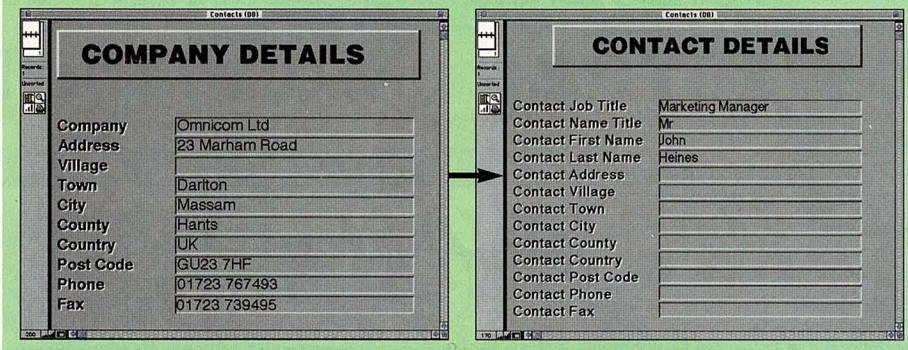
If you want to create a shortcut button, click on this grey button and create your own.



To see the floating palette, choose **Show Shortcuts** from **Shortcuts** under the **File** menu. You can change the way it looks from **Preferences** in the **Edit** menu.

AUTOMATE YOUR DATABASE

Say you keep a database that contains simple company details, such as address and telephone number. On a separate layout, you also keep details of your contact at that company, such as their address and telephone number. Sometimes these details are quite different, but often they are exactly the same. So here is the macro that enables you to automatically give the contact the same details as the company or type in unique details.

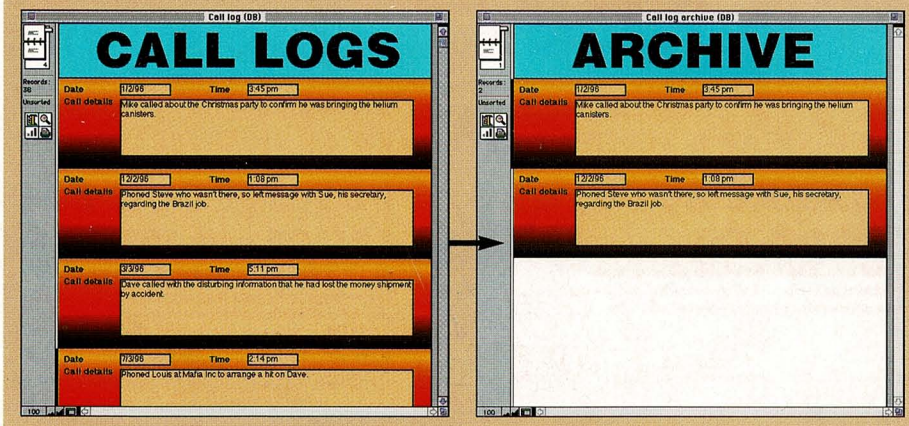


1 Start recording. In the company detail layout, press **[tab]** until the cursor is in the first desired field. This is better than clicking on the field, because if you later move the field on the layout, the macro won't work.
2 Choose **Select All** from the **Edit** menu.
3 Choose **Copy** from the **Edit** menu.
4 Choose the contact detail layout, from the **Layout** menu.
5 Press **[tab]** until the cursor appears in the corresponding field.
6 Choose **Select All**, then choose **Paste** from the **Edit** menu. This is to ensure that if there is already text occupying that field, it will be automatically overwritten.
7 Go back to the first layout, and repeat the process for the other fields. Stop recording.

SPRING CLEANING

You have a job where it is important to keep a written record of phone calls. For this purpose, you have a database with a separate record for each call. You also have a date field that automatically contains the date the record was created. Every few months, the database starts to become large and unwieldy with so many records. What you want to do is select the oldest records, remove them completely from the database and archive them.

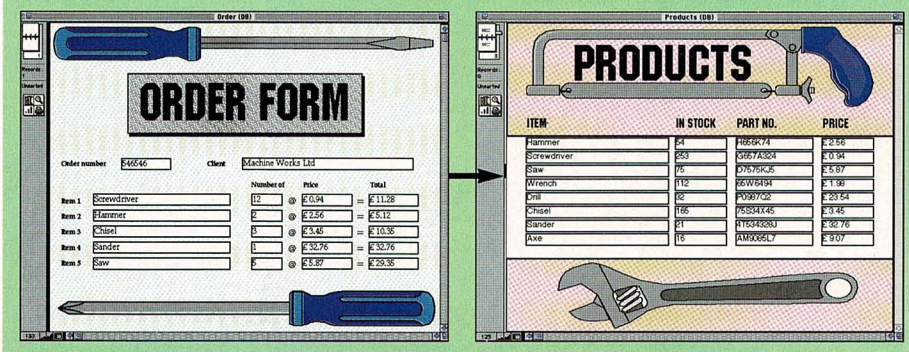
To do this, start by duplicating your call log database, then delete all the records within it, so you have an identical but empty database, for the archive records.


CALL LOGS
Date 1/2/96 Time 3:45 pm
Call details Mike called about the Christmas party to confirm he was bringing the helium canisters.
Date 1/2/96 Time 1:08 pm
Call details Phoned Steve who wasn't there, so left message with Sue, his secretary, regarding the Brazil job.
Date 3/3/96 Time 5:11 pm
Call details Dave called with the disturbing information that he had lost the money shipment by accident.
Date 7/3/96 Time 2:14 pm
Call details Phoned Louis at Mafia Inc to arrange a hit on Dave.
ARCHIVE
Date 1/2/96 Time 3:45 pm
Call details Mike called about the Christmas party to confirm he was bringing the helium canisters.
Date 1/2/96 Time 1:08 pm
Call details Phoned Steve who wasn't there, so left message with Sue, his secretary, regarding the Brazil job.

1 Now you can start recording. In the call log database, choose **Match Records** from the **Organize** menu.
2 Type in an appropriate search filter, such as 'Log Date'<(NOW()-60). This will find all records where a field by the name of Log Date contains a date older than 60 days from today.
3 Click **OK**, and all matching records become highlighted. Choose **Cut** from the **Edit** menu to put them on the clipboard.
4 Choose **Open** from the **File** menu, then locate and open the archive database. (The macro must take into account that the dialogue box might display any folder at this point, so to make sure it will work under all circumstances, start by pressing **[Command] [D]** to select the Desktop.)
5 Choose **Paste** from the **Edit** menu to insert the latest batch of calls.
6 With your calls safely inserted, choose **Save**, then **Close** from the **File** menu.
7 The call log database will come to the front, so choose **Save** again. And stop recording.

A SIMPLE LOOKUP SCENARIO

In the this third and final scenario you keep a database of orders for a range of products that you sell. In another database, you keep useful information about these products, including their price. What you want to do is get the orders database to search for the price details from the products database. This is a basic version of a *FileMaker Pro 2's* lookup facility, which in turn is a basic version of *FileMaker Pro 3's* relational abilities.


ORDER FORM
Order number 546546
Client Machine Works Ltd
Number of Price Total
Item 1 Screwdriver 12 @ £0.94 = £11.28
Item 2 Hammer 2 @ £2.56 = £5.12
Item 3 Chisel 3 @ £3.45 = £10.35
Item 4 Sander 1 @ £32.76 = £32.76
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ITEM IN STOCK PART NO. PRICE
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Axe 16 AM9086L7 £9.07

1 Open both databases, keeping the orders database at the front. Start recording.
2 Press **[tab]** until you have selected the first product field.
3 Choose **Select All**, then **Copy** from the **Edit** menu.
4 Choose your products database from the **View** menu, then choose **Find** from the **Layout** menu.
5 Press **[tab]** until the cursor is in the equivalent product field, then choose **Paste** from the **Edit** menu. Press **[enter]** to start the find.
6 Press **[tab]** until you have selected the price field, choose **Select All**, then **Copy** from the **Edit** menu.
7 Choose the order database from the **View** menu, press **[tab]** until the cursor is in the appropriate price field, then choose **Paste**.
8 If there are multiple fields, this process can then be repeated.

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4Mb Powerbook 500 Series	£ 115
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Powerful performance

Finishing off MACFORMAT'S insiders' guide to professional *HyperCard* programming, Rod Lawton looks at maths, graphics and harnessing the power of XCMDs...

Like most tools, *HyperCard* can be used to produce a masterpiece or a monster. So what is it that sets something like the excellent *MACBOY* personal organiser apart from the clunky *HyperCard* stacks littering the shareware world?

We looked at some of *MACBOY'S* tricks and techniques last issue. One of the cleverest is the way that many of its scripts involve mathematical calculations. They don't use complicated functions and concepts, but they are often convoluted – you need a clear head to think through the procedures. This is a necessary evil – if you want speed and polish, you sometimes have to resort to maths rather than simpler, slower, solutions.

For example, when you drag one of the entries in *MACBOY*, it either moves it or resizes it, depending on where you drag from. If you drag from the centre of the entry, it's moved; if you drag from any of the sides, it's resized. The field's script uses maths to establish where you clicked in relation to the position of the field: it uses the ClickLoc functions to tell it where the mouse was clicked, and the field's Loc properties to tell it where the field is. The following code works out whether you want to move or resize the entry, then calls the appropriate handler:

```
put (abs(the clickV – top of the target)) ¬
< 35 and (abs(the clickH – left of the ¬
target)) < (height of the target)/5 into ¬
clickCenter
put the mouseH > right of the target + ¬
10 or the mouseH < left of the target – 10 ¬
into dragOff
if clickCenter or dragOff then moveEntry
else stretchEntry
```

Normally when you move a field in *HyperCard* you have to swap to the Field tool, but *MACBOY* avoids this. It also manages to simulate the way the Finder deals with clicking on items and dragging them – so you can drag an outline of the original item, which only moves to its new location when you release the mouse button. To do this, *MACBOY* has another effective rather than elegant solution. It uses a second field, which contains a row of dashes in the first and last lines, and carriage returns to separate them. As you drag the entry, this field is made visible and follows the mouse pointer until you release the mouse button – whereupon the temporary field is hidden again and the real one is moved to the new position.

So where does the maths come in? First, you don't want the field to be placed just anywhere: it has to lie within the boundaries of one of the organiser's four columns. It's easy enough to ensure that the horizontal location of the fields is always one of these four values. Second, the fields should 'snap' to regular time intervals, rather than moving pixel-by-pixel. *MACBOY* uses this piece of code:

```
on mouseDown
  put (the clickV – top of me) into diff
  repeat while the mouse is down
    put top of me into theTop
    set topLeft of me to
      item max(min(4,(trunc(the mouseH/¬
125)+1)),1) of "11,136,261,388",
      min(max((top of me+((trunc((the ¬
mouseV-diff-top of me)/7))*7)),26),292)
  end repeat
end mouseDown
```

But how do you make sure the temporary field is the same size as the real one? You check the length of the field you want to move, then translate that, using the LineHeight property, into a number of lines. You then know how many carriage returns to put between the rows of dashes in the temporary field before it's displayed.

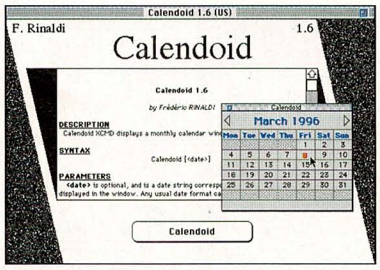
Fancy a date?

MACBOY'S serious maths comes in with the Calendar and Date displays. HyperTalk offers lots of formats for displaying the date and carrying out date-based calculations, but it doesn't make it easy and there are no shortcuts. The

Continued on next page

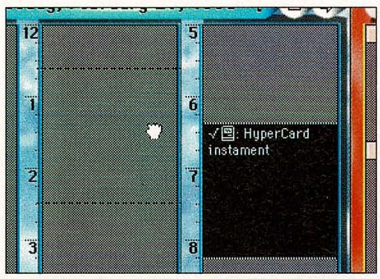
TALK PROPER

Despite all this power and functionality, especially via XCMDs, some programmers still don't consider *HyperCard* to be a serious programming language. Simon Whittaker, author of *MACBOY*, has a different opinion. He says that many C programmers do their initial authoring in *HyperCard* to get the interface right, because C won't let you quickly manipulate interface elements. They then go on to 'convert' this into C when everything is in place. According to Simon, 'If programmers put the same effort into learning HyperTalk as they do into learning C, they wouldn't need C.'



The Calendoid XCMD (eXternal CoMmanD), created by legendary XCMD programmer Frederic Rinaldi. This XCMD pops up a monthly calendar on a floating palette, which returns the date you click on. You can then use the date in a script.

How do you create a monthly calendar automatically in *HyperCard?* The date maths is only part of the problem; you also need to create a display. *MACBOY* uses a seven-by-six grid – seven for the number of days and six for the maximum number of separate weeks present in a month – with opaque buttons masking out unwanted days at the beginning and end of each calendar month.



When you move a field in *HyperCard*, it's dragged 'live'. How do you move an outline instead? With some sneaky scripting and a spare field...

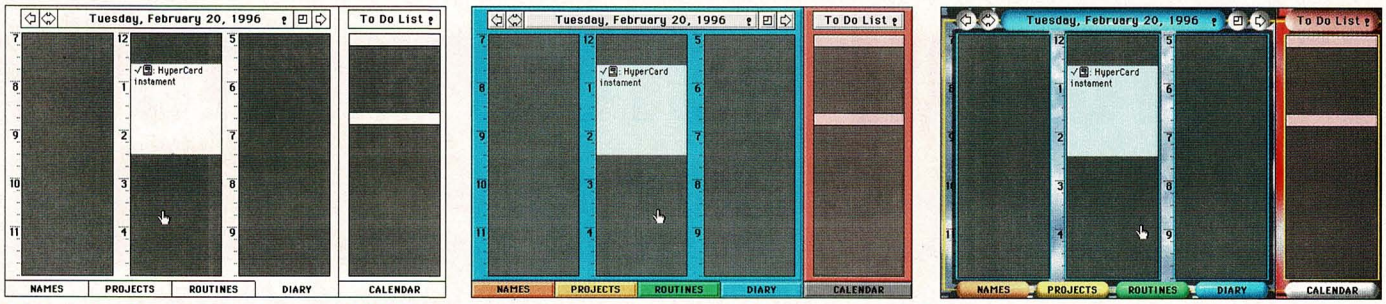
... And this field contains two rows of dashes, separated by enough carriage returns to mirror the height of the real field. Sneaky but clever.

DON'T DOUBLE-BOOK

The big problem in *MACBOY* is making sure that the field won't overlap an existing diary entry – an extremely complex problem. If you want a clue as to how a solution was reached, well, it involved a database that recorded the position of all the entries on the card...

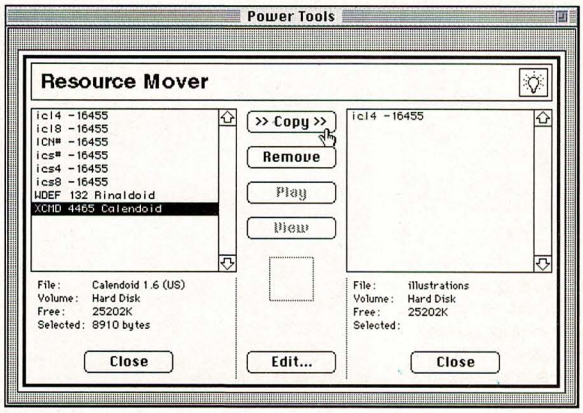
KEEP IT GOING

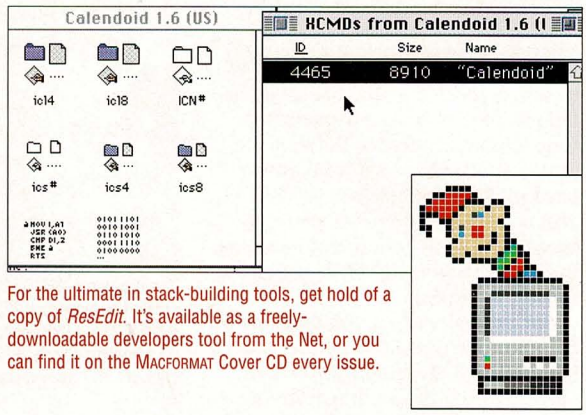
In the scripts on this page, the symbol ¬ means that you should continue to the next line – the line of script just wouldn't fit in our narrow columns.



What sort of monitor will your end users have? *MACBOY* includes three display options – black and white, colour and cool 3D – which require between 1Mb and 2.5Mb of RAM.

Since version 2.2, *HyperCard 2.2* has bundled the Power Tools stack, which contains *Resource Mover*, a quick and simple way of moving XCMDs, icons and other resources from stack to stack.





For the ultimate in stack-building tools, get hold of a copy of *ResEdit*. It's available as a freely-downloadable developers tool from the Net, or you can find it on the MACFORMAT Cover CD every issue.

COMPILEIT!

CompileIt! costs $149, and is available from Heizer Software. See its Web site (the URL is listed below) or call the company in the US on 00 1 813 581 6422 for more details.

RINALDI RULES

Frederic Rinaldi is the acknowledged king of *HyperCard* XCMDs. To date, he's written over 100 of them, and they share the legendary Rinaldi qualities – they're fast, reliable and extremely useful.

VITAL SITES

You can get information about XCMDs and other externals from the Net at the following sites: complete listing of externals at **http://hyperarchive.lcs.mit.edu/HyperArchive/Abstracts/dev/card/HyperArchive.html**

The *HyperCard* home page is at **http://www.glasscat.com/hypercard.html**

The Heizer Software home page is at **http://www.interedu.com/heizer/**

The Frederic Rinaldi Collection is at **http://mtlab.ecn.fpu.ac.jp/RinaldLib.html**

And you can find *MACBOY* on the Web at **www.macboy.com**

first problem is the date format set on your Mac. *HyperTalk's* most useful date functions are the long date and the short date, but you can set these up differently from one Mac to another. If you're designing an application for distribution, you must rule out this potential source of error, so you should work with the two date functions you can rely on: seconds and DateItems.

DateItems is a function that provides a specific list of all the date information your scripts require. You'll need the date functions in several places, but principally in the report generator (where you specify the dates you want reported on) and, most importantly, the calendar and diary sections. Adding days to the diary automatically (a week ahead, for example) isn't difficult, but creating and displaying the month-at-a-time calendar display is. You have to work out the day of the week on which the month starts, then make sure the day boxes start on that day. *MACBOY's* solution is to use a grid of seven by six day-sized fields and simply block out the unwanted fields at the beginning and end of each month with buttons. This won't appeal to *HyperCard* purists, but it is a fast solution, and the empty buttons and fields take up very little space in your finished stack.

Command performance

XCMDs (eXternal CoMmanDs) are *HyperCard's* secret weapon. They are small wedges of ultra-fast programming code that you can install in your stacks, providing features HyperTalk doesn't offer. *MACBOY* uses several. If you are a *HyperCard* owner, you have some already, including the Picture command, used to display a PICT in a separate window. The Color Tools stack, bundled since *HyperCard* 2.2, also installs XCMDs in your stacks, as does the ADDMotion stack.

XCMDs are often supplied in a stack which explains what they do and how to use them, and also contains the resources to install them in your own stack. You can move XCMDs from stack to stack using the Resource Mover card in the Power Tools stack, bundled with *HyperCard*, or you can use *ResEdit* – which is quicker and does a lot more besides (see the box).

Whatever you want *HyperCard* to do, chances are someone has written an XCMD to do it. So before you start trying to learn XCMD authoring, it's worth trawling the Internet to find what's available. Use a Web search engine to search for *HyperCard* sites – for details, see page 74. Any XCMDs you find will include documentation. When installed, XCMDs add more HyperTalk commands and functions to those already available, and the documentation tells you how to use them.

When you use the HyperTalk 'Start using' command to insert another stack in the message-passing hierarchy, you are not only making the new stack's handlers available but its XCMDs as well. For more XCMDs and related information, look at the Power Tools stack, available in *HyperCard 2.2* and *2.3*, where there are some real goodies. In fact, it's a shame Apple doesn't document all the superb extras it bundles with *HyperCard*.

If the problem with your *HyperCard* stack is one of speed rather than functionality, compile your own HyperTalk code using Heizer Software's *CompileIt!*, which can turn a HyperTalk script into an ultra-fast XCMD. This doesn't always create a speed advantage though – HyperTalk takes time to call an XCMD, and the XCMD can in turn be slow if it makes lots of calls back to HyperTalk (say, to collect information from lots of cards, using a repeat loop) – but it's always worth a try. **MF**

DES RES(EDIT)

You could describe *ResEdit* as being akin to a loaded gun. If this is the case, it's a powerful gun with lots of hair-triggers, none of which are immediately obvious. It's a disarmingly small utility which enables you to dig into your Mac and its applications, giving you the tools to do anything you want with them (except fix them when they subsequently stop working). It's something you should use with great care, but once you understand it, you'll find it indispensable for development.

You can use it to change the document and creator types of your standalones, add new signature icons (as opposed to those you can Paste in via the **Get Info** dialogue box), change **About this program** windows and intro screens, move icons, PICT resources, sounds and XCMDs around, and delete all the unused resources in your standalones, making them as compact as possible.

ResEdit is given away on the Cover CD of MACFORMAT every issue. You'll find it in the Resources folder, but it isn't a tool to be used by the novice – it could be the death of your Mac. See MacAnswers on page 88 for an example of what can go wrong.

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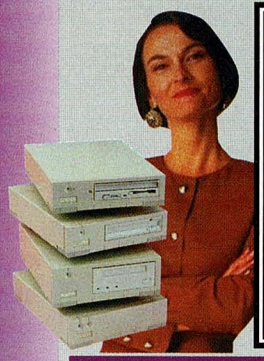

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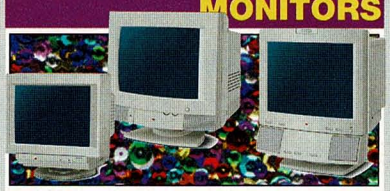

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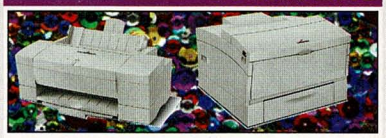

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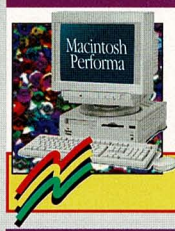

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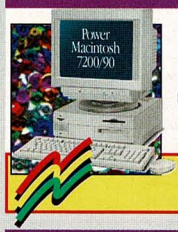

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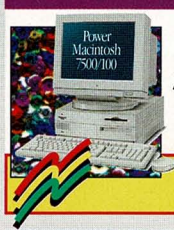

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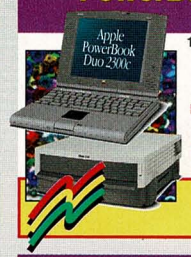

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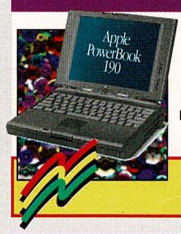

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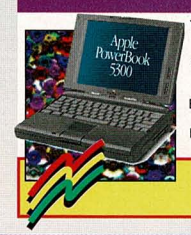

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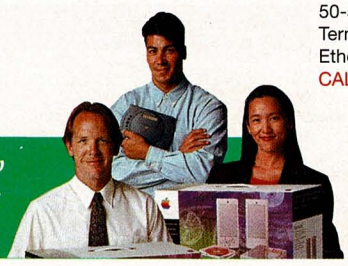

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MAC ANSWERS

More fun than a comedy mugging or a wine and anthrax party – yes, it's MacAnswers, the section where Lindsay Bruce solves your Mac troubles.

Welcome once again to MacAnswers, the section of MACFORMAT devoted to solving those little problems you're having with your Mac. This issue – as if you haven't guessed – has gone a bit misty eyed. Why? Well, it's Apple's 20th birthday, and what better way to celebrate than with this basket of assorted fruit? So, if your Mac is a lemon, upgrade it to a banana sharpish.

If you've got a Mac-related problem, fill in the form on page 88 and send it to us at: MacAnswers, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW, or e-mail us at **macformat@futurenet.co.uk** – please make sure you include MacAnswers in the subject title. Sorry, but we can't reply personally, or answer technical questions over the phone. We don't have time, and those nice people in white coats, carrying long-sleeved jackets with optional buckles, are coming to take us away.

The lonely Mac

SCSI DEVICES

Q *I'm confused. I have a Mac LCIII and a PowerCD CD-ROM drive. However, the Mac is reluctant to start up without the CD-ROM drive switched on. Sometimes it sits with the happy Mac icon staring at me; sometimes it loads some Extensions and then freezes. Either way, it seems lonely without the CD-ROM drive for company, and refuses to play. What's going on? Is it a System problem or a SCSI problem? In the past I have had to replace the hard drive, because it failed for some reason.*

James Dore
via FutureNet

A You're not supposed to have SCSI (Small Computer Systems Interface) devices, like CD-ROM drives or scanners, connected to your Mac unless they are switched on. Okay, maybe nine times out of ten you'll get away with it, but you're asking for trouble all the same. When starting up, you should always switch on external devices first, and then switch on your Mac. When shutting down, switch off your Mac first and then any external devices. Although SCSI was originally intended to work as a 'hot-plug' interface – enabling you to connect and disconnect devices without switching off the Mac first – in practice it's far too temperamental for this. Please don't try it – you could fry the drive or, worse still, the SCSI controller circuitry in your Mac. The results tend to be black, charred, and very expensive.

Missing Megabytes

STORAGE

Q *I have bought a SyQuest EZ135 drive. Apart from the huge transformer that takes up a lot of space, and the meagre instructions – one sheet of folded, recycled A4 – I am very impressed. The unit works brilliantly and I can run applications from it directly, which is a great help. But, it's called a 135Mb storage device, yet when I double-click on its icon and add the amount of space already used to the amount of space still available for use, the best total I ever get is 125.8Mb.*

When I had to reformat a dodgy SyQuest 135Mb cartridge, it still only gave me 125Mb. Who nicked the other 10Mb? How do I get it back? If I can't, then is this a job for Trading Standards?

I bought the system on the strength of its speed and the storage size of the cartridges. Having bought ten of these I have lost 100Mb. The cost per megabyte ratio has taken a serious hammering in comparison to the adverts.

Shaughan Ferguson
Lubenham, Leicestershire

A SyQuest EZ cartridges have an unformatted capacity of 135Mb, but when you format them, some of this space is used up. I'm afraid your Mac is the culprit here – it's nicked the other 10Mb for its own use. Your Mac needs to create directory structures on the cartridge before it can be used to store files – this is what initialisation is all about. On top of that, your Mac creates invisible Desktop Files on the root level – the first window – of the disk. This is why no Mac disk, even if it's just been formatted, is ever completely empty. You can't get the 10Mb back because your Mac needs it. As for Trading Standards, quoting the unformatted capacity might seem a little bit misleading, but it's perfectly legal. And let's face it, given the EZ135's speed, capacity and price, you're still getting a bargain.

This Mac will self-destruct...

STARTING UP

Q *1. I have a Performa 6200. Programs like* Norton Speed Disk *require you make an emergency startup floppy disk that contains a System Folder. How can you fit over 4Mb of System Folder onto a single floppy disk?*

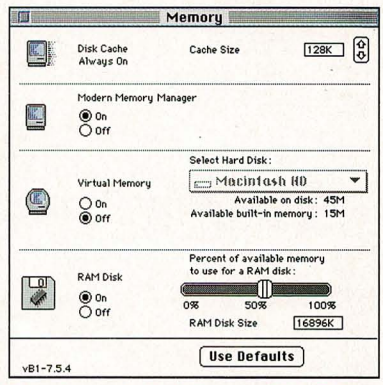
2. I've heard that computers will shut themselves down at the start of the year

A REAL RAM DOUBLER

Last issue MacAnswers mentioned the SIMM Doubler from MicroMac, an adaptor that enables you to plug two SIMMs into a single SIMM slot. We said you could plug a 4Mb and an 8Mb SIMM into the SIMM Doubler to give a total of 12Mb of RAM. This was incorrect. You must use SIMMs of the same size and speed – two 8Mb SIMMs, for example. Our apologies for this oversight. The person responsible has been flogged and promises he won't do it again. For more details on SIMM Doublers, contact MacRapide on 0181 381 4810.

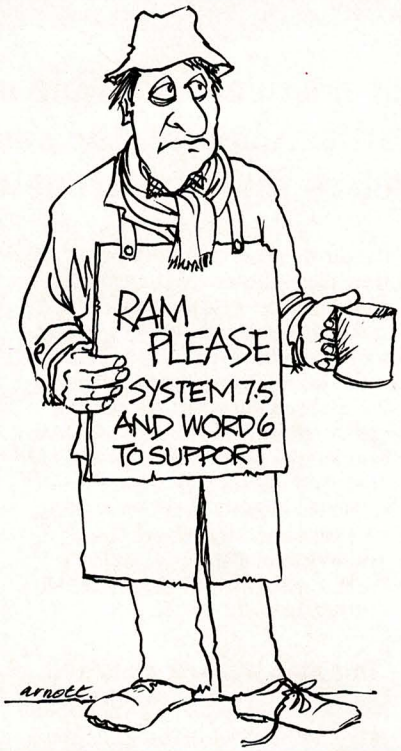
Continued on next page

The SyQuest EZ135 is a lovely, fast, cheap drive – but hang on, how much did they say you can fit on one of those disks? See 'Missing Megabytes'.



These days, you're lucky if you can fit the Finder on a 1.4Mb floppy. You're better off using a RAM disk instead. See 'This Mac will self-destruct...'

Norton Utilities comes with *Startup Disk Builder*, a program that packs a System Folder and a copy of the utility of your choice onto a floppy. See 'This Mac will self-destruct...'



MINI TROUBLE-SHOOTING GUIDE

If you are having problem with your Mac, there are a few things you can try to solve the problem yourself.

1. Restart your Mac.
2. Restart your Mac with Extensions off (hold down **[shift]** during startup).
3. Disconnect any SCSI devices and peripherals – see 'The lonely Mac'.
4. Read the manual.
5. Boot up from a floppy or CD containing a System folder.
6. Reinstall your System software.
7. Reinstall the application you're having trouble with.

2000. Is that true? If so, will it affect Macs and what can be done about it?
Tony Barnett
London

A *Norton Speed Disk* requires that the disk you are optimising is neither the startup disk, nor the disk from which the program itself is being run. This means you have to start up from another disk with the *Speed Disk* utility on it. *Norton Utilities* comes with a program called *Startup Disk Builder*. This program will create startup disks for use with *Norton Disk Doctor, Speed Disk,* and *Disk Editor*. The program works by copying your System Folder and stripping out all the non-essential bits, creating the smallest possible startup disk. Even the Finder isn't used; *Startup Disk Builder* substitutes the utility you're using – *Speed Disk* for example – for the Finder. When you boot from this, *Speed Disk* will launch automatically. This is the only way to fit both the utility and a System Folder onto a System 7.1 or 7.5 startup disk. The drawback is that you're unable to use it to do anything other than run the utility in question, because the Finder isn't there.

If you don't have the full *Norton Utilities* package – for instance, if you got *Speed Disk* from a shareware or commercial compilation CD, and therefore don't have the *Startup Disk Builder* program – then all is not lost. You can use the RAM disk feature in any version of System 7 to create a virtual startup disk. To do this, open the Memory Control Panel and switch on **RAM Disk**. Use the slider on the right of the Control Panel to set the amount of memory to be used: 6Mb should be enough, but 8Mb might be more comfortable. Once you've done this, restart your Mac.

When the Finder has loaded, you should see a RAM disk icon on your Desktop. This is simply a portion of your Mac's memory pretending to be a disk. It will work in exactly the same way as a normal disk, and you can start up from it, but if you lose power in any other way, then you lose the data on the RAM disk. You can copy a minimal System Folder to this RAM disk, either by using the System CD that came with your Performa or, for a faster and easier solution, use a stripped down copy of the System Folder from your hard disk. Make sure you copy the Startup Disk Control Panel from the Control Panels folder too. Next copy *Norton Speed Disk,* or whichever utility you're using, to the RAM disk. Last, go into the Startup Disk Control Panel in the System Folder of your hard disk and select the RAM disk icon as the startup disk, then restart your Mac once more.

The first thing you should notice is your Mac will start up incredibly fast, because the information it needs is already stored in the portion of memory used as a RAM disk – all it needs to do is copy it to the section of RAM your Mac is using as application memory. You will now be able to run *Norton Speed Disk,* or whatever utility you're using, from the RAM disk.

2. This might happen to certain other computers we could mention, but not the Mac. If you're lucky, you might get a special Happy New Millennium message from some of Apple's programmers in a future System software upgrade, but your Mac will not suddenly stop working. If you are worried about this, try opening the Date & Time Con-

THE COMPLETE GUIDE TO WASHING YOUR MAC

There comes a time in every Mac owner's life when it all goes pear-shaped, or, should we say, rather nastily pear-coloured...

Ye olde yellow Mac

CLEANING YOUR MAC

Q *You must have noticed that as your Mac gets older it goes yellow instead of grey. I purchased a second-hand printer – an ImageWriter II – and it looks totally different from the picture in the manual. Is it possible to get the original colour back?*
Sebastien Vanhoucke
Belgium

A Yes, Macs and Mac peripherals do age, and the casings can go slightly yellow. The best solution to this problem is to use a cloth, dampened in luke-warm water, with a little washing-up liquid or mild detergent. Make sure you first unplug all the cables from the back of your Mac (or printer), including the power lead. Most importantly, ensure the cloth you're using isn't completely saturated. If you get water inside the ventilation slots of your machine, then Guy Fawkes night will come early this year when you reconnect the power supply. Leave your Mac to dry in a warm place (although preferably not the oven or the microwave).

Sticky situations # 4

COFFEE AND KEYBOARDS

Q *I made the ghastly mistake of spilling coffee all over my keyboard. I did what the manual said: unplugged it, turned it upside down and left it to dry, but now some of the keys are sticky and it looks horrible. Have I damaged it? How should I clean it?*
Michélle Spindle
Toulouse, France

A It should be all right as long as it was a decent brand of coffee. If it was a supermarket's own-brand then I'm afraid your keyboard is gubbed.

Seriously, most keyboards are fairly sturdy and can handle the odd spillage. As long as you make sure it's completely dry before you plug it back in, then you should have no problems. If the keys are sticky, or you have ugly brown stains all over the casing, then you can, in fact, wash it in the sink – although we wouldn't actually recommend this tip to anyone who can't tell one end of a screwdriver from the other. If, however, the year-long warranty on your keyboard is past, then you might as well get out your Marigolds and sort this out yourself.

All you have to do is take the back off the keyboard using a small crosshead screwdriver and remove the circuit board with all the keys attached to it. You can then wash the two halves of the casing in ordinary washing-up liquid. When it comes to cleaning the keys, you don't need to take them off. Leave them on the circuit board and use a damp (again, not soaking wet) cloth to clean them. Leave all the bits to dry properly, put the whole thing back together, and plug it back into your Mac.

Bear in mind that any coffee on the circuit board will have dried up, and it isn't going to affect the keys. Cleaning the keyboard just makes it look and feel more comfortable. If you are the type of person who calls an engineer whenever a light bulb needs changing, then we wouldn't recommend taking things to bits. Instead, lug the keyboard down to your nearest Apple authorised repair centre, and they'll clean it for you.

trol Panel and set the time to 11.59pm, and the date to 31 December 1999. Close the Control Panel and wait for one minute. If nothing happens, try restarting your Mac. Still nothing? Well, you can change the time and date back to the present, safe in the knowledge that you've got nothing to worry about.

The hanging Mac

CRASHES

Q *Sometimes, when I want to restart or shut my Mac down, the cursor disappears and the Mac won't respond to any input. To get out of the situation, I hold down* ***[command] [control] [power key]*** *resetting the Mac. It happens even when I'm in the Finder with no applications running except* MacTools Pro 4.0 *with auto check and anti-virus enabled. Could you please tell me why this happens?*
Bijan Bidari
Nagoyi-Shi, Japan

A The problem you have is that your Mac is hanging, or freezing as it's sometimes known. It's getting stuck in an infinite loop and won't accept any input, and there's no way out of this other than to reset it. Your problem is most likely caused by not quitting out of *MacTools Pro* before selecting **Restart** or **Shut Down** from the **Special** menu. You are not supposed to shut your Mac down while it's still running applications; you should quit out of all of them first.

Repeated use of the reset button on your Mac could damage files on your hard disk, because your Mac's not getting the time to update its bookkeeping files that keep track of where things are kept on the disk.

If you are still having problems shutting down, even when you just have the Finder running, then you should reinstall your System software from a backup disk. Your Performa 575 (never released in the UK) shipped with System 7.1, but you are using System 7.5.1 on your Mac, so you must either have bought this or had it provided by your dealer. Whatever the case, you should reinstall the System software from these disks. If you don't have a backup or the original System disks, then get in touch with your local Apple dealer, who will be able to provide you with a set.

No margin for error?

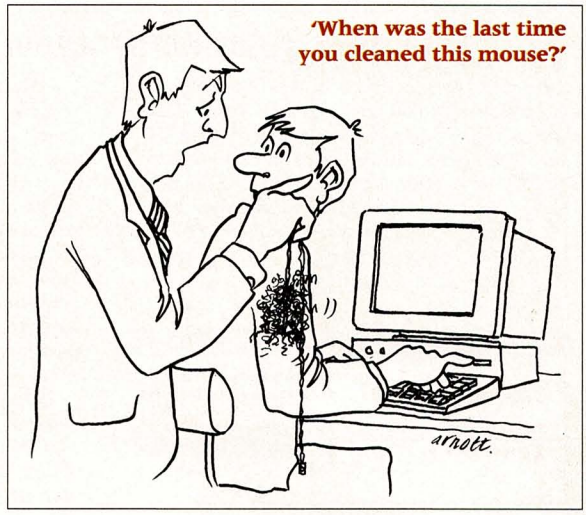
PRINTING

Q *I have a Performa 630, a StyleWriter 2400, and a MicroTek Scanmaker II. I print many posters and use the* ***Page Setup*** *dialogue box to change the orientation and select* ***2 up*** *in the document size. It's crude, but it works. However, if I have an image or typeface in the centre of the two pages, I am forever trimming off margins, even if I set the margins in the* ***Page Setup*** *box to zero. The poster is still clipped by the printer. It would save me time when sticking the two pages together if I didn't have to trim a quarter of an inch off the top and bottom. Any way around this?*
Nicky Marston
Millport, Isle of Cumbrae

A This has to do with your printer rather than the way you use the **Page Setup** box. Like most desktop printers, the StyleWriter accepts A4 paper, but it can't actually print the whole page – it leaves a margin around the outside. This is because most desktop users leave one anyway, and it makes it cheaper to manufacture the printer. It also prevents ink missing the page and clogging up the printer's insides. Even MACFORMAT's pages – like those of every other magazine – have to be cropped before they are bound together.

The only solution to this problem is to purchase either an edge-to-edge printer or a printer that accepts pages larger than A4 and is therefore capable of printing a whole A4 page. It is really only higher-end printers that tend have these features, so you're looking at spending over £2,000 just to be able to use that extra quarter of an inch. Of course, there's the added advantage that the print quality would be somewhat better from such a machine.

You could try changing the **Page Setup** and printing on A5 paper. This way you could print a single poster at a time without any margins. You'll need to set your template up quite carefully, though, and print a few test pages to get it right, but it will work. The best programs to use for this are page layout applications such as *QuarkXPress* and *PageMaker*, but you could use *ClarisWorks* – which comes bundled with most Performas (check out the step-by-step guide in MACFORMAT 24 to see if *ClarisWorks* suits your DTP needs). Once the positioning's right, **Save** the document as a **template**, or if you're using *ClarisWorks*, as a **Stationery item**. Next time you open the document, *XPress*, *PageMaker* or *Claris* will create a copy of it, so you won't have to fiddle about to get your image in the right place. Your only problem now is making sure the paper in the StyleWriter is in the same place each time...



Disappearing act

SYSTEM FOLDER

Q *The System Folder on my Mac has disappeared. There are no items in the Apple Menu, yet all the software, including* ClarisWorks, *appears to be working. The problem is that I can't print anything out. I have tried reinstalling the System Folder, but to no avail – I keep getting an error message saying that there is already an invisible item. I suspect that one of my children may have trashed the System Folder. Is this possible?*
David Taylor
Colwyn Bay, Clwyd

A The kids certainly look like the guilty parties here, but the System Folder isn't completely gone. Some of the items, like the Apple Menu Items folder and your Extensions, have been trashed or damaged, but if there was

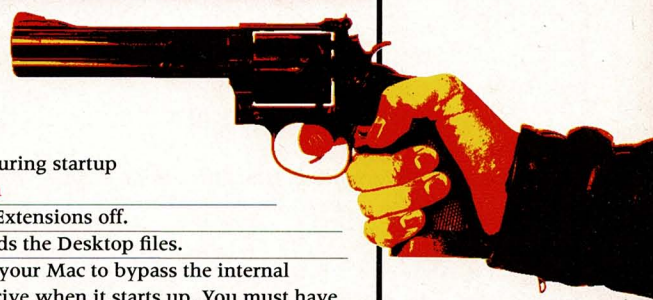
LARGE RED FLASHING WARNING

Why all the warnings about *ResEdit?* Because it's the only program freely available from Apple that can totally screw up your Mac. *ResEdit* is Apple's resource editing tool, used by all Mac programmers and many Mac gurus. It enables you to hack into any file on your Mac, including the System File, but once you've changed something, it's very difficult to put it back, so it's a dangerous tool in the hands of a novice. Don't get us wrong – *ResEdit* is invaluable, but it's not a tool you should let the kids play with. *Always* work on a copy of a file, *never* the original.

Continued on next page

TROUBLE-SHOOTING KEYSTROKES

Having a few keystrokes up your sleeve not only creases your shirt, but is incredibly handy when you run into trouble. It also makes you look dead flash in front of your mates in the office.



Startup keystrokes – hold these down during startup

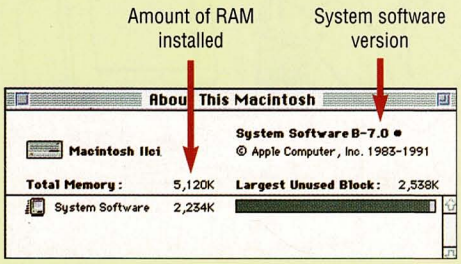
Keys	Action
[shift]	Turns Extensions off.
[command] [option]	Rebuilds the Desktop files.
[command] [option] [shift] [delete]	Forces your Mac to bypass the internal hard drive when it starts up. You must have another disk with a System Folder on it.
[command] [option] [P] [R]	Zaps the PRAM (Parameter RAM – a chip inside your Mac which stores the date, time, and a few easily replaced details about your Mac's hardware).
[command] [option] [T] [V]	Switches your Mac's screen display from its monitor to a connected television set (Audio Visual Macs only).

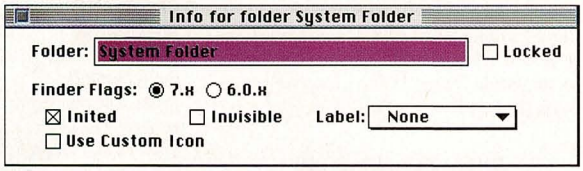
The do-it-yourself problem solving guide...

One of the most common causes of problems on the Mac are Extensions or Control Panels clashing in your System Folder. It's easy to check if this is the case. Restart your Mac and hold down **[shift]**. Release the key when you get the message, 'Welcome to Macintosh. Extensions off.' If everything works, then the problem lies in your System Folder. The only way to work out which item is the culprit is by trial and error. Remove a few Extensions and/or Control Panels, then restart your Mac, without holding down **[shift]**. Keep on doing this until the problem no longer occurs and you've found the offending software.

If this doesn't work, try rebuilding your Desktop. Start up your Mac holding down **[command]** and **[option]**. You'll get a message asking if you want to rebuild the Desktop. Click **[OK]**, wait for it to finish and see if this solves your problem.

If you're still stuck, use the form below to write to us. We'll need to know a few facts about your Mac, so when you're in the Finder, select **About This Macintosh** from the **Apple** Menu. The picture (left) shows what we need to know.





One of *ResEdit's* features is its ability to make files and folders invisible – or vice versa, should the need arise. For an example, see 'Disappearing act'.

no System Folder at all, your Mac just wouldn't start up. The System Folder itself sounds like it's been made invisible – a trick your Mac uses for folders it doesn't want you to open. There are some shareware and commercial utilities that can do this, and it sounds like someone has been playing with one of these. To get your System Folder back, you need a program that can see invisible files, such as *ResEdit* or *File Buddy*.

ResEdit is on our Cover CD every month inside the Resources folder. It's a very powerful program that enables you to edit files and their attributes. Launch it by double-clicking on its icon, and you'll be presented with an animated splash screen. Click once to get rid of this. You'll then be asked which file you want to open; click **Cancel.** To get your System Folder back, go to the **File** menu in *ResEdit*, select **Get File/Folder info**. You'll be presented with an **Open and Save** type dialogue box. Go to where you keep your System Folder, usually in the first window of the hard disk, and you should see it. Select the System Folder and click the **Get Info** button. You will be presented with a window that lists the folder's attributes. Uncheck the **Invisible** check box and close the window. Don't do anything else – you could do some serious damage here! *ResEdit* will ask if you want to save your changes. Click **OK** and quit the program. Your System Folder should now reappear in the Finder.

Now to get your printer up and running. To do this, you'll need to reinstall the System software. Now the System Folder is no longer invisible, this should not be a problem.

Now the obligatory warning: *ResEdit* is an extremely powerful program that enables you to edit any file on your Mac – including the System File. It's an invaluable programming tool and a handy trouble-shooter, but not particularly user-friendly. *Do not* play with this program unless you're sure you know what you're doing. Editing a folder's attributes – its visibility, if it uses a custom icon, and if it's locked – is quite safe because your Mac checks these regularly, and if you get it wrong it's just a matter of clicking a check box to fix things. Editing a file is a different proposition, because files hold data that can easily be changed or lost when using *ResEdit's* tools. If you must edit a file in *ResEdit*, then make a copy of the file and work on that – you'll still have the original if something goes wrong. Lastly, *ResEdit* enables you to open active System software files, but don't be tempted. Bitter experience in the MACFORMAT office tells us that this will crash your Mac and trash your System Folder. *Always open a copy!*

If you baulk at using *ResEdit*, you can use *File Buddy*. It doesn't have any of *ResEdit's* editing tools, so it's safer and far less stressful to use, and the latest version is on the Cover CD. **MF**

If you send in a question for the MACFORMAT experts to solve, please fill in and include this form (or a copy of it). And please make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: MacAnswers, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW or fax it to us on 01225 446019.

Name .....

Address .....

.....

.....

.....

Your Mac
(For example, Performa 200, IIfx, PowerBook 145):

.....

System version
(see **About This Macintosh** screenshot above): .....

Amount of RAM
(see **About This Macintosh** screenshot above): .....

Are you using Virtual Memory? ..... **YES/NO**
(This is accessed from the Memory Control Panel under System 7)

Do you have 32-bit addressing turned on? ..... **YES/NO**
(This is accessed from the Memory Control Panel under System 7)

Details of any relevant hardware which could help us to answer your question:

.....

.....

Now, use this space to describe your problem or question. Please include as much relevant information as possible, and continue on a separate sheet if necessary.

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MAC ANSWERS

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141

PowerWave 150

The fastest (single processor) desktop computer in the world, and it's not even an Apple Mac – it's Power Computing's biggest, fastest Mac-compatible.

MACFORMAT Classic

It's barely a year since Power Computing was was set up, and it's on to its third series of Mac-compatibles. The latest addition to the range is the PowerWave 150, the fastest desktop computer in existence.

The PowerWave 150 is a close cousin of the PowerMac 9500: it's based on the same PCI (Peripheral Component Interconnect) expansion bus, uses DIMMs, and is driven by a PowerPC 604 processor running at a gobsmacking 150MHz. (Apple's fastest Mac, the 9500/132, runs at 132MHz.) PowerWaves come in three flavours – 120, 132, and 150 – where the numbers indicate the clock speed of the processor (everything else is the same across the range). Like the PowerMac 9500's, PowerWave processors are mounted on a daughterboard, so upgrading later on is easy.

The PowerWave sports three PCI slots, 16Mb of RAM expandable to 512Mb, a 1Gb hard disk, quad-speed CD-ROM drive, and even a built-in Iomega Zip Drive. Each machine also comes with built-in EtherNet capabilities, a 512K Level 2 cache card, and dual SCSI interface. But what really sets the PowerWave apart from the Apple range is its ability to use both PCI and NuBus expansion cards. For an extra £352 you can buy a Stargate PCI card, into which you can plug two NuBus cards. This means you can have two NuBus and two PCI cards installed in the machine at the same time, which will appeal to you if you have invested heavily in NuBus cards and want to upgrade to a faster Mac without having to buy new PCI versions of your existing cards. Distributor Computer Warehouse says it will soon make this card available to Apple PCI PowerMac owners too if all goes well.

But there all comparison ends with the Apple PowerMacs, because the PowerWave 150 is, without doubt, the best behaved PowerMac we've ever had the fortune to encounter. For the two weeks in which it graced our office, it crashed only once – and that was because we were running some dodgy shareware. It's smooth, easy to use, and wickedly fast – *Photoshop* blitzed along, applying filters to huge graphics files with alarming ease.

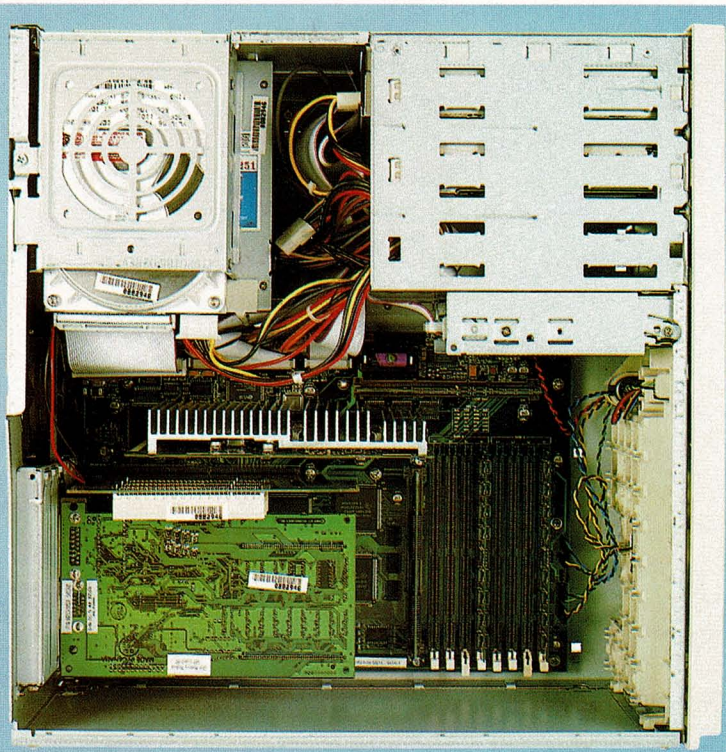
Where the PowerWave disappointed was in the disk and graphics tests: it was slower at accessing files from its hard disk than the Power 120 or the PowerMac 9500 – both slower machines. The graphics test also seemed to suffer – but if you're buying a Mac this powerful, you'll be sticking in either the optional graphics card or a third party equivalent.

Our final gripe is the casing, which hasn't changed from Power Computing's last series of clones, and isn't getting any prettier. But apart from that, it's an incredibly fast and reliable machine that makes sense to upgrade to... if you just happen to have four grand to spare.

LINDSAY BRUCE

WHAT'S A PCI POWERMAC?

The first series of PowerMacs used the same memory and expansion slots as the 68K based Macs. Apple changed this for the second series of PowerMacs, unleashing the full potential of the PowerPC processor by using the new PCI (Peripheral Component Interconnect) expansion slot standard, which replaced the NuBus slots found in older Macs. From now on, all new Macs and Mac compatibles will be based around this architecture.

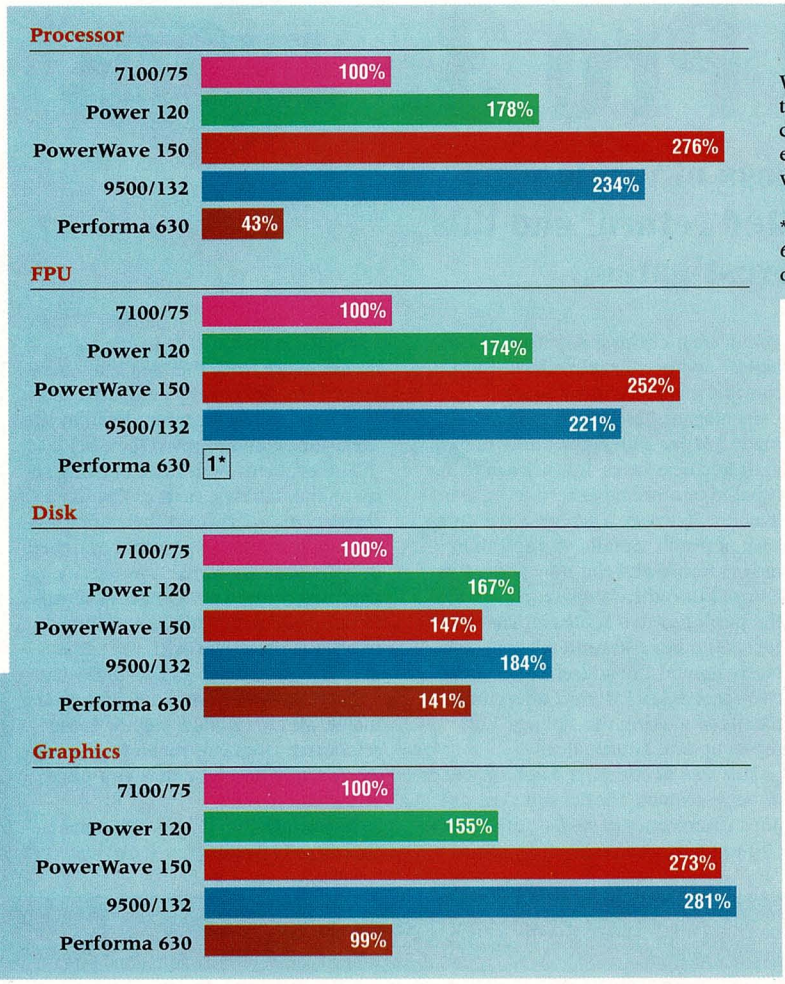


Getting the cover off the PowerWave is easy. Once inside you have complete access to the PowerWave's DIMM slots (middle right), and PCI slots (lower left). The processor daughterboard is that card in the middle with the massive heatsink.

The world's fastest desktop computer to date, and it's a Mac. Well, okay – a Mac-compatible if you *have* to be pedantic.

POWERWAVE VS POWERMAC

	PowerWave series	PowerMac 9500
Processor	PowerPC 604	PowerPC 604
Clock speed (MHz)	120/132/150	120/132
RAM	16Mb exp to 512Mb	16Mb exp to 768Mb
PCI slots	3	6
VRAM	2Mb exp to 4Mb	2Mb exp to 4Mb
Hard disk	1Gb	1 or 2Gb
CD drive	Quad-speed	Quad-speed
Zip Drive	Yes	No
Street price	120: £2,932 132: £3,524 150: £4,112	9500/120: £3,877 9500/132: £4,171



HOW FAST IS A COPY?

We tested the PowerWave 150 against Apple's top PowerMac, the 9500, using *MacBench*. The results are displayed in the bar charts to the left – the longer the bar, the better the result. Not everybody can afford a 9500 (that's putting it mildly), so we've included a Performa 630 for comparison.

* The Performa 630 doesn't have an FPU because it's based on the 68LC040 processor. The result shown is the main CPU's attempt to deal with the calculations given to it.

POWERWAVE 150

Price: £4,112 (8Mb of RAM, 1Gb hard disk, 1Mb of VRAM).
Contact: Computer Warehouse on 0171 724 4104.

FEATURES 92%
Extremely fast, lots of bundled software, keyboard and mouse included. The case is uglier than Jim Carrey, though.

EASE OF USE 90%
Runs like a dream. Much better behaved than Apple's current range of Macs.

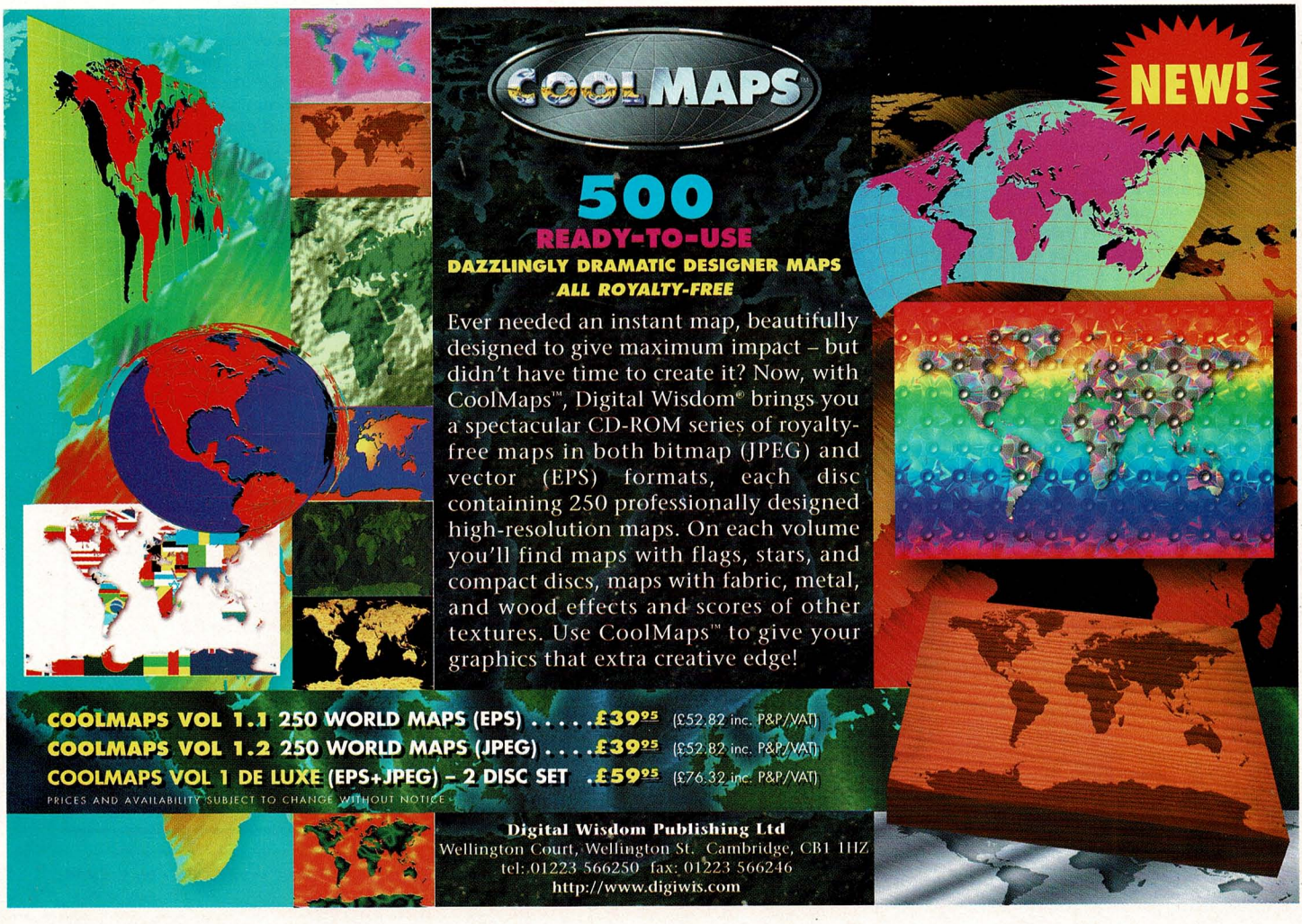
DOCUMENTATION 92%
Comprehensive, understandable and... well, you'll never read it anyway.

VALUE FOR MONEY 94%
A mind-blowingly powerful computer at a comparatively cheap price.

MACFORMAT RATING 92%

POWER FOR LESS DOSH

If you can't afford four grand, take a look at Power Computing's Power Curve Mac-compatibles. They're not as high-powered as the PowerWave 150, but they come in at a substantially lower price. The Power Curve features a 120MHz PowerPC 601 processor, three PCI expansion slots, 8Mb of RAM expandable to 256Mb, 2Mb of VRAM, quad-speed CD-ROM drive, and an 840Mb hard drive. Keyboard, mouse and bundled software are included. The Power Curve is £1,998 – for more details contact Computer Warehouse on 0171 724 4104.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FileMaker Pro 3

Following the huge box office success of version 2, *FileMaker Pro* makes its long awaited return, and this time it's relational. Derek Smith investigates...

NATIVE

Although *FileMaker Pro 2* would run on a PowerMac, it wasn't specifically designed to do this and is therefore relatively slow. Version 3, however, is native, meaning that it does contain PowerMac specific code. As a result it runs much faster on a PowerMac, but it still works well on non-PowerMacs.

In computerland, release schedules are about as reliable as a 1978 Skoda, but few products can match *FileMaker Pro 3* for the sheer audacity of its lateness. It was originally planned for release two years ago, when PowerMacs were first being introduced. But now that it has finally arrived, has it been worth the wait?

FileMaker is a crucial product for the Mac. Just as *Excel* dominates the spreadsheet world, *FileMaker* is the ruling database. Its success stems in part from its sophistication, but mainly from its ease of use. It's one of those delightful programs that is extremely intuitive. Pull-down menus contain exactly the options you'd expect, in the places you want. Dialogue boxes behave in just the way they should and double-clicking any item has the logical and predictable effect. It's a comfortable piece of software.

Its elegant design and ease of use made *FM Pro 2* ideal for home and light business tasks, but it wasn't capable of more advanced feats. For instance, let's say a school has a database of pupils' details. A pupil then moves house and the new address is entered into the database. However, the pupil has two brothers. The operator would have to remember to separately amend the addresses on those two records, as *FM Pro 2* offered no means of making the siblings' addresses update automatically.

This sort of complex database needs to be relational. That doesn't mean it pops round unexpectedly at the weekend to show you snaps of its trip to Portugal; it means that instead it breaks away from the idea that every record contains every field. This concept is explained in more detail in the 'Relations come to town' box below.

The problem with most existing relational databases, such as *Omnis* or *4th Dimension* – apart from their price – is that their immense power is matched only by their immense complexity. Learning to use them requires a huge time investment. This has endowed relational databases with the same user-friendly image as DIY dentistry.

FileMaker Pro 3 has finally taken the major, and inevitable, step of going relational. Does this mean you've lost the friendly database that you once knew and loved?

Thankfully not. Claris has done a superb job of making it look, feel and

RELATIONS COME TO TOWN

The big selling point of *FileMaker Pro 3* is not its cool new icons, but the fact that it is relational. It might be that you've never used a relational database before and are therefore unsure what one is. The best way to explain is using an example. Let's say you wanted to keep a database of Macs owned by a company. You'd keep data such as the model, serial number, owner, amount of RAM and so on. You also want to keep a database of software with fields for the application's name, version, owner, and registration number.

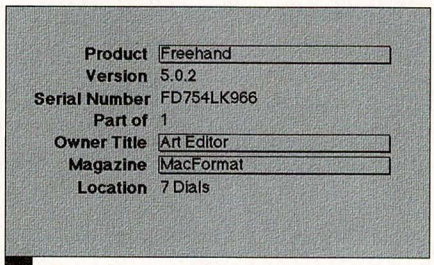
Apart from the owner field, the data is completely different, so you would keep it in two separate databases. But wouldn't it be great if, say, when you looked at the record for a certain Mac, you could see all the software installed on it? Or when you looked at the record for a piece of software, you could see what model Mac the owner has and how much RAM is installed in it?

FM Pro 2 did have a data look-up facility, but this had several limitations. You could only look up one item in another database, so for instance, it would only find and display the first piece of software owned by a particular person. It didn't update automatically either, so if you changed the owner of an application in the software database, the Mac database wouldn't know about it until you specifically told it to go and have a look.

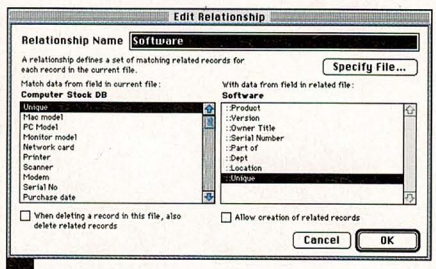
Similarly, examining a database was a one way transaction. If you used the Mac database to look up and display the name of an application and its version number, you couldn't just amend the version number from that screen and expect it to magically change in the software database.

Relational fields overcome all of these problems. Rather than merely looking up data from another database, they show the actual live field from the other database. You can now see all the related information, it updates automatically, and you can amend the version number from the Mac database.

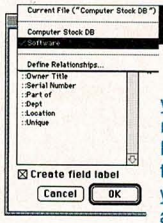
This is how you might go about setting up such a relation in *FM Pro 3*:



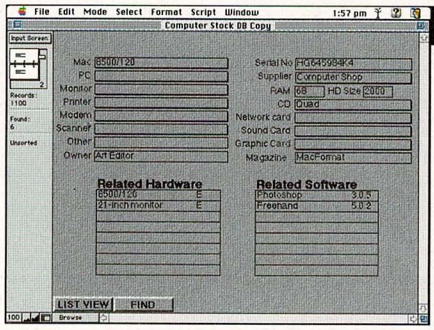
1 Create the Mac and Software databases. Choose **Define Relationships** from the **File** menu.


Edit Relationship
Relationship Name Software
A relationship defines a set of matching related records for each record in the current file.
Specify File...
Match data from field in current file:
Computer Stock DB
With data from field in related file:
Software
Cancel
OK

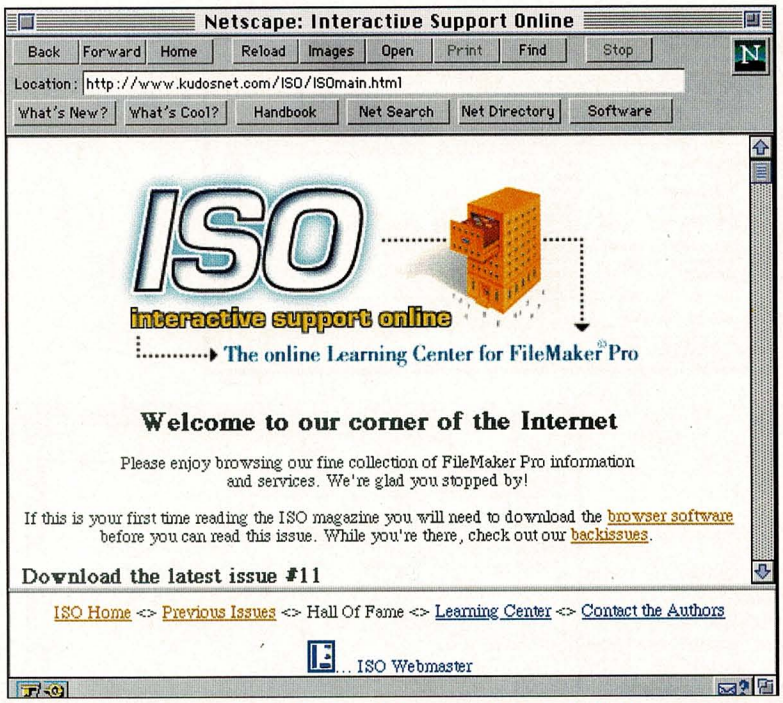
2 Link the owner field in both databases.



3 In the Mac database, go to the **Layout** mode and drag a field onto the page, as you would in version 2. Now select the field you want to place. From the pop-up menu at the top of the dialogue box, select to see all the fields from the related database. In this case, you'd place the fields containing the application name and version.



4 That's all there is to it, although at the moment this will only show the first piece of software it comes across. To show data from all of the related records, you create a portal, which is very similar in principle to a repeating field and enables you to specify the number of times that the task should be repeated.


Netscape: Interactive Support Online
Back
Forward
Home
Reload
Images
Open
Print
Find
Stop
Location: http://www.kudosnet.com/ISO/ISOmain.html
What's New?
What's Cool?
Handbook
Net Search
Net Directory
Software
ISO
interactive support online
The online Learning Center for FileMaker® Pro
Welcome to our corner of the Internet
Please enjoy browsing our fine collection of FileMaker Pro information and services. We're glad you stopped by!
If this is your first time reading the ISO magazine you will need to download the browser software before you can read this issue. While you're there, check out our backissues.
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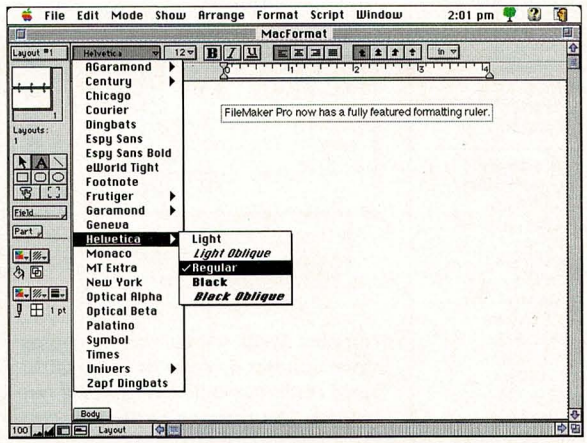
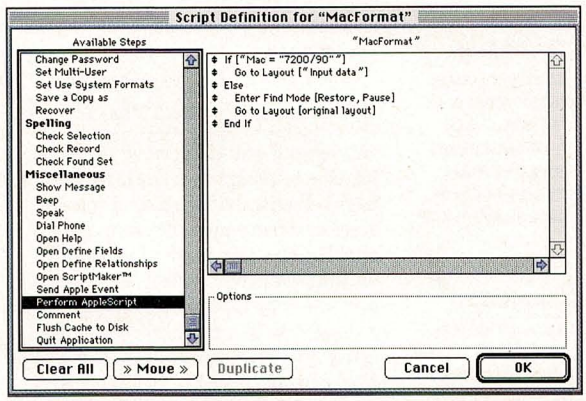
If you have Web access, take a look at **http://www.kudosnet.com/ISO/ISOmain.html** for an online magazine dedicated to your favourite database.



The excellent new text formatting features mean that you can also use *FileMaker Pro 3* as a word processor.



Advanced scripts now include functions such as **if... then... else** and **as... loop... until**.

act just like the old version. When you use *FM Pro 3* databases – as opposed to when you create them – you're unlikely to notice much difference.

When you first open a version 2 database with *FileMaker Pro 3*, it takes a short while to convert it all to the new format, then away you go. The pull-down menus and keyboard shortcuts are virtually unchanged. You'll gradually discover all the subtle differences and alterations between the two versions over a period of time and be pleased with each one.

Relational databases don't just derive their power from the ability to hold data relationally in tables rather than flat files. In almost all cases, they also include a scripting or programming language, enabling you to create completely customised databases. *FileMaker Pro* has always had a ScriptMaker function which you could use to create macros for repetitive tasks. Unfortunately, it wasn't very powerful, the developers being content with just making it easy to use.

The ScriptMaker in version 3 has been significantly improved, enabling you to control many new parts of the database. It also offers **if/then/else** statements, which make it more versatile, if not quite a programming language.

Classic

FileMaker Pro 3 will run on a Classic, with just 1Mb of free RAM

Instead of including a programming language, *FM Pro 3* supports AppleScript, Apple's own macro language. This means that you can write AppleScript code within *FileMaker* itself.

You might think that Claris is taking the easy option, by not bothering to create a more specific – and therefore faster – scripting language of its own. The advantage of this, however, is that AppleScript is already a well-known language and enables you to control the Finder and other AppleScript aware programs from within *FM Pro 3*.

Going native

If you're a PowerMac user, you're going to experience particular benefit from *FileMaker Pro 3*. Because of the delay in its release, this is one of the last major programs to go PowerMac native – and the speed increase is as dramatic as you would hope.

On a PowerMac 7200, *FM Pro 2* performed 50 summary calculations on a

INTERNET SITE

Not surprisingly, Claris has a Web site, which you'll find at **http://www.claris.com/** It's worth checking this out occasionally to find things such as the free version 3.02 updater.

Continued on next page

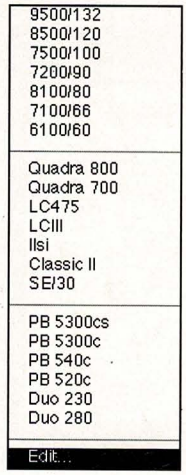
NEW FEATURES

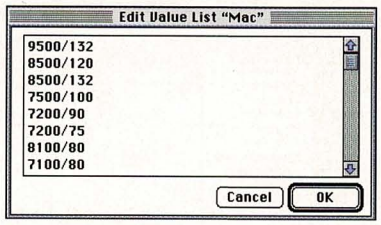
Apart from being a relational database, *FileMaker Pro 3* looks and works in a very similar way to the previous version, so you can start making databases without having to refer to the manual. When you do, however, you'll notice lots of minor changes. Individually, each change is just a small enhancement, but together they make *FM Pro 3* much more powerful than its predecessor. Here's a summary of the best new features:

- It's relational. See the 'Relations come to town' box.
- It's PowerMac native.
- Pop-up value list menus can be edited on the page, without going to **Define Fields**.
- The same value list can be shared by as many fields as you want.
- Advanced word processing features including control over tabs and alignment using a text ruler, similar to the all-singing, all-dancing *ClarisWorks*.
- It offers proper mail merging within *FileMaker Pro*, which means there's no need to use a separate word processor.
- There's a tool for automatically creating buttons.
- You can auto enter the result of a calculation into a standard field.
- It offers global fields, which contain a single value that is used by all records in the database.
- Enhanced ScriptMaker supports many more powerful commands such as **if... then... else** loops.
- It supports drag and drop.
- It can now handle databases over 32Mb in size.
- Passwords can control what menus a user sees and the areas they have access to.
- It supports a range of networking protocols, including IPX and TCP/IP.

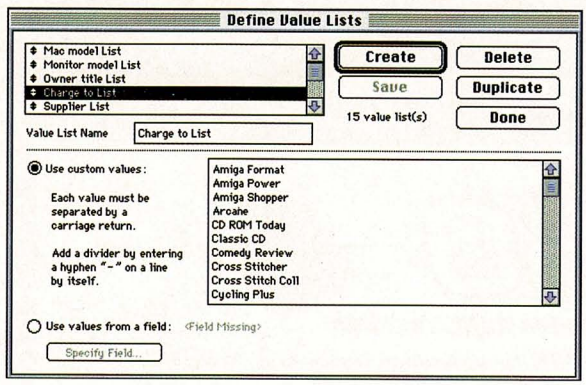
CROSS PLATFORM

FileMaker Pro is cross platform, which means it's available for the PC as well as the Mac. If Macs and PCs are on the same network, they can even share the same database. The PC version, unfortunately, is only available for Windows 95.

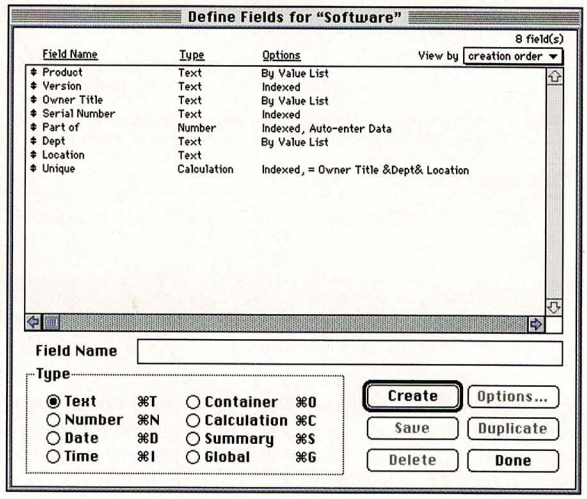




The **Edit** option, which appears at the bottom of pop-up menus, enables you to edit the list on screen. Also note the new section dividers.



Value lists are defined separately from fields. They enable several different fields to use the same list.



The way you define fields has changed little since *FM Pro 2*. You can, however, now have Global fields, which contain one value that's used by all records.

complex database in a mind-numbing three minutes 45 seconds. Even with *Speed Doubler* installed, it still took two minutes 15 seconds. Calculations on the same database, converted to version 3, took just 50 seconds. Even forgetting all the other improvements, a 400% speed increase is reason enough for PowerMac owners to upgrade today.

All Macs are equal

But what if you don't have the good fortune to possess a PowerMac? These days it seems that whenever a software company upgrades one of its applications, you have to upgrade your Mac to cope with it. Believe it or not, *FM Pro 3* is capable of running on a Classic, with a minimum of 1Mb of free RAM, although it does prefer to run on 3Mb of RAM. And since the program comes on just three floppies, even a full installation won't stress a small hard disk.

Over a range of tests, *FM Pro 3* ran no slower on non-PowerMac Macs than version 2, and some users reported that it felt quicker. This may seem too good to be true, but the reason lies in the fact that the whole program has been rewritten from the ground up – another factor in its late arrival.

So what would you pay for this marvel? Over the past year we've been spoiled, with *FM Pro 2* dropping in price from around £200 to £100. This kept users happy while they waited for version 3 and beat off technically superior opposition who were unable to match such an aggressive price. Version 3 is a reasonabe £234, while upgrades from any previous version will sell at around £116.

So what you've got is an excellent database that has been tweaked and improved throughout. It runs on a Classic, but is satisfyingly fast on a PowerMac. It offers impressively powerful features, though they come at an equally impressive price. Unless you are very certain that you need something more powerful, this is the database for you **MF**

CD VERSION

FileMaker Pro comes on either floppy or CD. As an extra, the CD version contains lots of examples and templates for you to browse and learn from.

GRAPHICS

Making a databases of graphics used to result in huge databases. *FM Pro 3* enables you to keep a reference to a graphic stored on your hard disk instead of the graphic itself. This means a database of 1,000 pieces of clip art can be tiny.

INDEXING

Indexing fields speeds up searches on your database, but takes up more disk space. You can now manually select which fields should be indexed.

FILEMAKER PRO SERVER

With databases becoming bigger and more sophisticated, you will often find that several people want to access the data at the same time. This has always been easy with *FileMaker Pro*. It's also quite secure, enabling you to create a variety of passwords, giving users specific read and write privileges, and limiting their access to certain parts of the database.

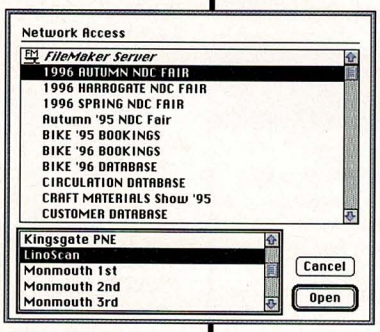
The problem is speed. If you are the first person to open the database, then you are the host. Subsequent users access the database as guests via the host Mac. As such, the performance of guests depends greatly on the speed of your host Mac. As more and more people log on, your Mac will grind to a standstill.

The solution is to install a dedicated database server that runs *FileMaker Pro Server*. This opens all the databases, acting as the host, making all users guests of the server.

There are several reasons why this speeds things up. First, the server software is a hugely simplified version of *FileMaker Pro*, optimised for the task at hand. Second, because the server is dedicated, it's not slowed down by users trying to do other jobs with it. Third, you can afford to use a high-end Mac as the server, giving it lots of RAM, leaving users with lower spec Macs.

Unfortunately, version 2 of the server software wasn't native, so you couldn't make effective use of PowerMacs. Also, it could only hold 16 databases open at once. This was fine for small businesses, but larger companies struggled.

FileMaker Pro Server 3 solves these problems, being both native and able to host 100 databases. Claris expects that it will be available sometime in May, and the price will be around £1,174 for a full copy, or £175 for an upgrade from version 2.



Version 2 of the *FileMaker Pro Server* software only enabled you to simultaneously open 16 databases. Version 3, due out in May, promises 100.

FILEMAKER PRO 3

Price: £233.83. Upgrade from any previous version: £116.33. **Out:** at last. **Requires:** any Mac, 1Mb of free RAM (3Mb recommended), System 7 or later (System 7.1 recommended). **Contact:** Claris on 0181 756 0101.

FEATURES 93%
Where's the kitchen sink?

EASE OF USE 96%
For a relational database, it's amazing. Intuitive and uncomplicated.

DOCUMENTATION 87%
Fewer pages than version 2. Fails to explain a few functions properly.

VALUE FOR MONEY 92%
Compared to other databases available at present, it's a bargain.

MACFORMAT RATING 96%

BEST SERVED CHILLED

REFRESHING THE PARTS OTHER PROVIDERS CAN'T!

INGREDIENTS

Local call access

Local call access for upto 94% of uk means you can surf longer cheaper!

Complete support

Friendly expert help 7 days a week giving full technical support

Great with a curry

Web space/design/consultancy ISDN single host/routed Leased lines 64K to 2Mb

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Two disks, 10 minutes and your there!

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Contact: Easynet Group PLC, 39 Whitfield Street, London w1p 5re. Phone: 0171 209 0990 Fax: 0171 209 0981

E-mail: ***postbox@easynet.co.uk*** Web: ***http://www.easynet.co.uk***

Adobe Illustrator 6

Just when *FreeHand 5.5* appeared to have stormed past in the vector art race, *Illustrator 6* joins in. Alistair Dabbs does his Murray Walker impression.

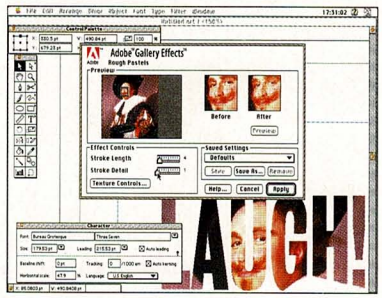
FREEHAND 5.5

FreeHand 5.5, *Illustrator*'s long-time competitor, scored 80% in MACFORMAT 33. It costs £530, and is available from Computers Unlimited on 0181 200 8282. Upgrade paths are also available.

First, a surprise: Adobe hasn't taken the opportunity to update its interface. In fact, even *Illustrator 5* users will be on very familiar ground. Instead, a series of extra palettes and menu commands has been added, along with an enhanced system of customisable keyboard shortcuts. Perhaps the most useful is the new **Control** palette, which gives you a handle on an object's x and y co-ordinates, height and width, and enables you to alter overall size and rotation; you can change measurements by typing them in directly or by applying + and – values. It is a shame that the **Control** palette isn't all-encompassing like the one in *PageMaker*, though. Instead, you have to access fonts from a separate palette, and paragraphs from yet another. It's also irritating that the **Control** palette's resize and rotation fields reset themselves to 100% and 0 degrees after each application rather than keeping the last-applied measurement current.

You can rasterise vector artwork within your *Illustrator* document without leaving the program or exporting the artwork first. The process is, however, extremely slow.

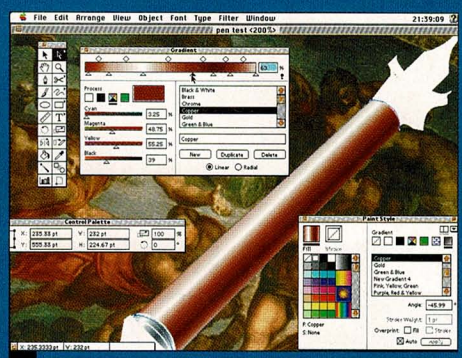
The **Align** and **Plug-in Tools** palettes are nice touches, though. The former simply enables you to alter the relative positions of selected objects (alignment and distribution) by clicking on icons rather than dragging through the menus. The **Tools** palette is not unlike *FreeHand's* **Xtra Tools**: third parties can create custom tools as plug-in modules, which then appear in this palette. You are supplied with five ordinary tools to get you going: **Star, Polygon**, **Spiral**, **Twirl**, and a useful **Knife** tool, which replaces the scissor-and-join hassle out of splitting up an object into smaller parts.



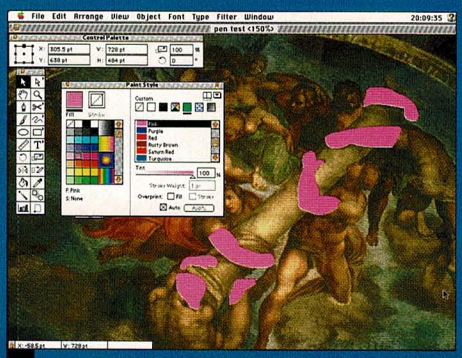
The problem with the Laughing Cavalier is that he's so well-painted, people might think I've simply photographed a model. A touch of Gallery Effects' Rough Pastels ought to make him look more like the painting he is.

THE DEATH OF A MASTERPIECE

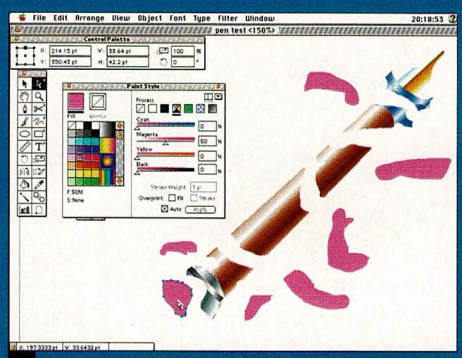
1 A simple graphic created in half an hour from a scanned photo and vector art combined. To coin a phrase: how do they do that?



2 Where there was once a column, we've begun constructing a giant pen using the **Pen** tool. Here, the central section is filled with a custom multi-level gradient.



3 The finished pen is hidden so that only the masterpiece shows. The areas where the column is overlapped by arms are traced over using the **Freehand** tool.



4 Now the masterpiece is hidden and the Pathfinder Divide filter applied so that the traced area is cut away from the pen behind. Now just **Show All**.

Photoshop compatibility

One of the factors that play a big part in *Illustrator's* catch-up exercise is its ability to use *Photoshop* plug-in filters to enhance placed bitmap images. It's clear to any graphic designer today that quality vector graphics combined with dumb bitmaps just aren't good enough; you need to be able to combine the two to generate professional results. *Illustrator 6* now does this.

Adobe has been working hard on standardising an API (a standard interface design) that enables greater cross-program compatibility of its plug-in technology. Although, in the event, *FreeHand 5.5* got there first, *Illustrator 6's* implementation is much smoother and can handle a wider variety of *Photoshop* plug-ins within the same RAM allocation, and with apparently fewer 'out of memory' errors. The program comes supplied with a small number of standard plug-in filters in addition to the complete *Gallery Effects* series. They are all marked in the menu with a *Photoshop*-icon; you can simply drop an alias of your *Photoshop* plug-ins folder into that of *Illustrator 6* and use them too.

Not all *Photoshop* plug-ins are compatible, but most of the popular ones – including practically all elements of *Kai's Power Tools 3* – work very well. One word of warning, though: the filters require more RAM under *Illustrator* than they do under *Photo-*

shop, and they also take longer to complete and redraw.

Import export

Alongside this enhancement is *Illustrator 6's* stunning import/export support for bitmap file formats, ranging from TIFFs and JPEGs all the way to PhotoCD, Targa, BMP, Pixar, Amiga and PCX. You can also turn any vector graphic into a bitmap with a simple **Rasterize** command. You can save to any *Illustrator* format, right back to version 1, enabling you to maintain full backward compatibility with other graphic designers and repro houses who haven't yet made the upgrade.

One limitation, though, is you can't apply plug-in filters to CMYK bitmaps; you have to convert them to RGB first. This is odd for a package that doesn't itself support the RGB colour model. If your artwork's destined for print, it's probably worth running it through a CMYK conversion and back again before importing into *Illustrator*; otherwise you won't get faithful colour on screen. That said, *Illustrator's* colour separation tools have at last been integrated into the main program, enabling you to print straight from *Illustrator* to a filmsetter, complete with screen control and separation marks.

Back on the vector side, *Illustrator* offers more vector filters that you can apply to create special effects. The *Ink Pen* filter enables you to create realistic greyscale hatching effects, and there's a *Path Pattern* filter with which you can run any pattern according to a path (as opposed to dumb tiling).

Adobe has also made the most of its domination of graphics packages by offering drag-and-drop conversion of images between *Illustrator, Photoshop* and *PageMill*. Vector graphics dragged over to *Photoshop* are rasterised instantly to bitmap at screen resolution; drag holding down the **{command}** key and only the paths are transferred. Note, however, that you need *Photoshop 3.0.4* or later to do this.

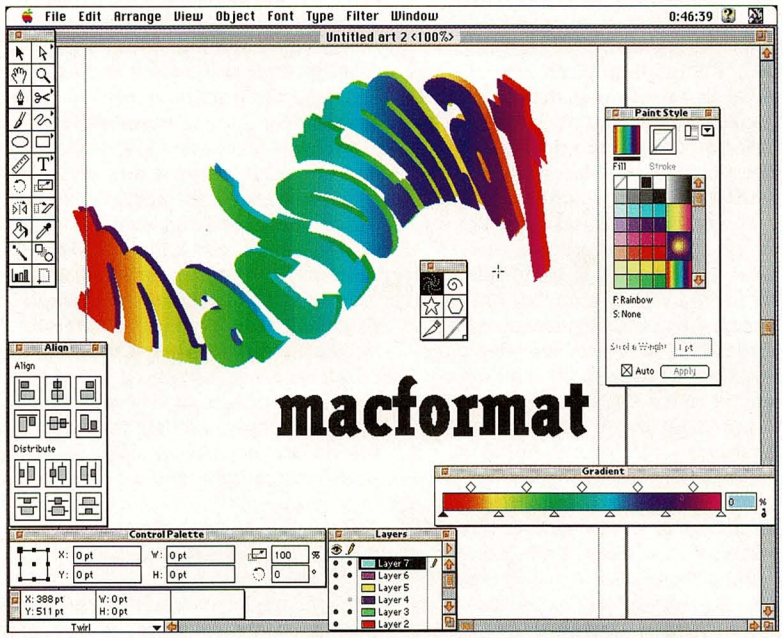
Despite its smart integration features, certain aspects of *Illustrator* still grate – not least the way the gappy tool palettes fill up the screen, with only one or two that can be minimised. *FreeHand 5.5* scores highly over *Illustrator* in the space efficiency of its context-sensitive **Inspector** palette – *Illustrator 6* doesn't even support tabbed palettes like *Photoshop*. And it's a pain that the otherwise excellent online Deluxe tutorial will only run with *RAM Doubler* disabled.

While *Illustrator* has succeeded in bringing its feature list back roughly onto par with *FreeHand*, it's not easy to say which is the better package. It's also worth remembering there is a new breed of vector art packages out there, biting at *Illustrator* and *FreeHand's* heels, offering better and faster drawing features. Adobe's response is far from decisive, but *Illustrator 6* offers superb value for money. **ALISTAIR DABBS**

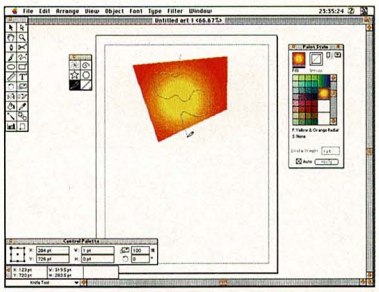
ON THE DELUXE CD-ROM

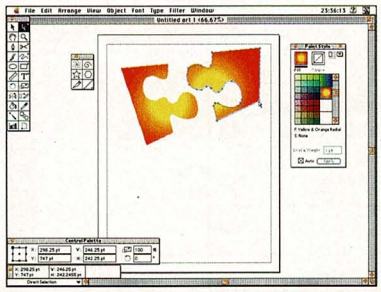
In addition to the program itself, the *Illustrator 6 Deluxe* CD includes:

- *Adobe Dimensions 2* (3D effects)
- *Adobe ScreenReady* (anti-aliasing tool)
- *Adobe Gallery Effects 1, 2 and 3 (Illustrator* plug-ins)
- *Adobe Fetch 1.2* (image browser)
- Video tutorials
- *Acrobat* manuals
- *Adobe Acrobat Reader 2.1*
- QuickTime 2.1
- Sound Manager 3.1
- 42 templates
- 48 path patterns
- 134 Collector's Edition patterns
- 300 Adobe Type Library PostScript fonts
- *Illustrator* and *Photoshop* software development kits
- Demos of *Photoshop 3.0.5, Premiere 4.01, After Effects 3.0, Streamline 3.1*



Roll on the **Twirl** tool – it's simply irresistible. Note also the new **Align Object** palette on the left.





A long-overdue feature, *Illustrator 6* offers you a knife tool for slicing up objects in one slash. Notice how the gradient fill is also sliced straight through the middle. Life couldn't get much easier...

ADOBE ILLUSTRATOR 6

Price: £411. (You can upgrade from any version of *Illustrator* for £117.) **Out:** now.
Requires: LC or better, 4Mb of free RAM (or Power Mac with 7Mb of free RAM), System 7 or later, 16Mb of hard disk space. CD-ROM drive recommended.
Contact: Adobe on 0181 606 4000.

FEATURES 75%
A worthwhile upgrade if you're a current *Illustrator* user, but not enough to make the switch from *FreeHand*.

EASE OF USE 75%
More intuitive than many packages, but the big, gappy tool palettes soon fill up your screen.

DOCUMENTATION 90%
Simply the best. Loads of online help in the Apple Guide menu, lookup *Acrobat* format and QuickTime video, with minimalist dead tree manuals.

VALUE FOR MONEY 85%
With all the extras on the Deluxe CD, it's a bargain – and some vendors are selling it for as little as £320.

MACFORMAT RATING 80%

PLUG-IN COMPATIBILITY

When it comes to *Photoshop* plug-in technology, you'd think that Adobe has an unfair advantage – but Macromedia beat it to the punch by building plug-in compatibility into *FreeHand 5.5* late last year.

GIF US A SONG

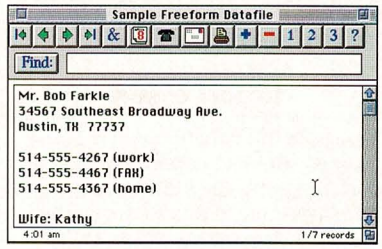
Although you cannot import or export to the popular compressed GIF format for the Internet, Adobe says a free GIF filter will be forthcoming within the next few months.

FREEBIES

Both *FreeHand 5.5* and *Illustrator 6* come with software-filled CD-ROMs, but *Illustrator 6* offers the better value for money, including *Dimensions 2* and Gallery *Effects 1, 2* and *3* in addition to the usual clip art and font collections.

InfoGenie

Want to store lots of information? Scared by complex databases? Looking for a freeform approach with no rules? This new type of database could be the answer.



InfoGenie niftily enables you to use freeform data files – files with no rigid organisation.

SON OF QUICKDEX?

Older Mac users will have fond memories of *QuickDex* and *QuickDex 2*, which were fast, freeform and faff-free. *InfoGenie* is like *QuickDex* with knobs on. Great software... in its time.

InfoGenie is a database with a difference. It takes two different approaches to storing your information: it can store it either in a freeform data file, where you write what you like in whatever form you like, or as a field-based data file, which is more like a traditional database with regular fields.

The approach you take depends on the type of information you want to store. Traditional field-based databases are fine for information that can be broken down into regular categories (like names, addresses and telephone numbers), but not so good for information with a less structured form. For example, if you want to use a database to store your thoughts on music or literature, each record will be composed differently – you need a blank page to work with, and any rigid organisation will only limit you.

But although *InfoGenie's* freeform data files are one step away from anarchy in database terms, you can still impose a little order on them. For instance, you can specify blocks of text to use for printing, and as long as you make sure the relevant information is in the same place on each record (for example, starting on line 5), you can automate printing envelopes or labels.

Finding your information in this freeform structure is quick and painless. Type the word or words you want to search for into the **Find** box (or drag them – *InfoGenie* supports drag-and-drop), hit **[return]**, and keep hitting it to see all of the instances where the records match – all very quick and simple. Indeed, you'll find speed and simplicity everywhere. *InfoGenie* uses only one font throughout each whole data file, and you can prevent it from building a font list when it starts up, which speeds up launching. Other speed-enhancing options enable you to automatically highlight the **Find** box on opening, choose a data file to open automatically, and use English-only sorting.

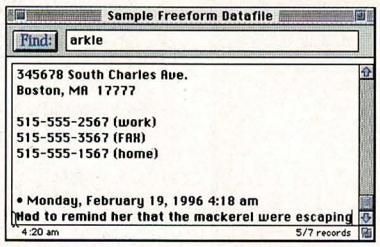
If you need more order in your records, *InfoGenie* also offers field-based data files. A list of contacts, for example, might contain fields for each title, first name, last name, address, telephone number and so on – the rigid structure enabling you to store the same items of information for each person. The last field in each record, though, is always freeform, meaning that you can write paragraph after paragraph of notes or comments.

It's easy to print either envelopes or labels from both types of data file, and you can also date stamp your comments in a variety of ways – including chronological and reverse-chronological order.

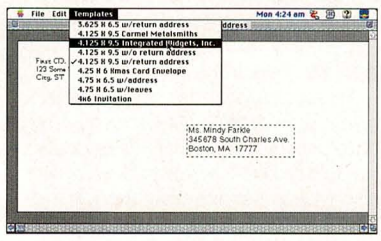
That's the end of the good news. Despite its magical connotations, *InfoGenie* offers little more than an ordinary database – the database module in *ClarisWorks*, for example. Although freeform data files offer a certain naive simplicity and user-friendliness, this is more than offset by *InfoGenie's* limitations in other respects. For example, you can't create alternative layouts, and you can't perform searches based on more than one criterion. Despite its speed and interface, *InfoGenie* is, in fact, extremely primitive. If you've been around Macs long enough, it harks back to those days when every ounce of speed was a godsend, and each new application did things differently in their quest for genius.

InfoGenie still has value as a tool if you're wary of more traditional databases, but if you want to use it for anything more serious than storing names and addresses, or information of personal interest, you'll soon find that its limitations become all too apparent.

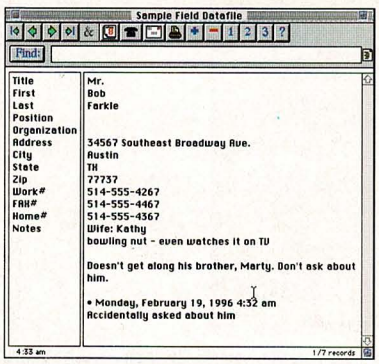
ROD LAWTON



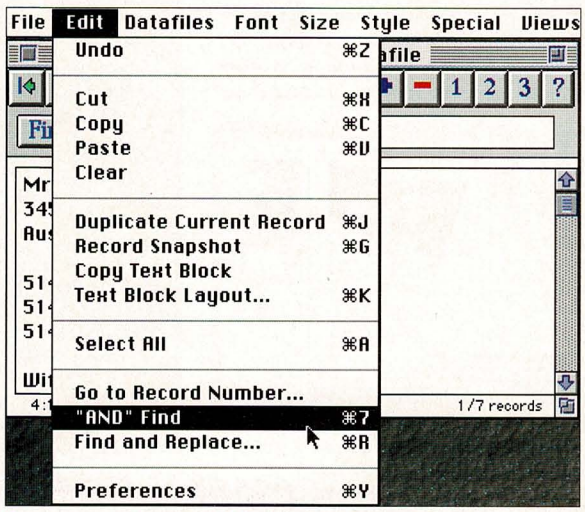
You can use either freeform or field-based data files to keep a log of events and conversations, date stamping them with a single mouse-click.



Once you've found a way of persuading your printer to accept envelopes, *InfoGenie* makes it easy to bash them out quickly, via a range of templates.



Field-based data files are easy to work with: one column has the field name, the other column shows its contents for that record.



You can narrow down your *InfoGenie* searches by specifying two words or strings. It will then only find records that contain both.

INFOGENIE

Price: £65. **Out:** now.
Requires: any Mac, 2Mb of RAM, System 7 or later.
Contact: Softline on 0181 401 1234.

FEATURES 55%
Useful enough in its own right, *InfoGenie* has some nice wrinkles, but is overshadowed by other databases.

EASE OF USE 93%
Ideal if you have no experience of other applications, or if you can't be bothered to mess about with field layouts.

DOCUMENTATION 88%
Friendly and informative for Mac and database novices. Spiral-bound, so it even stays open while you read it.

VALUE FOR MONEY 67%
A lightweight application with a middleweight price. Good at what it does – straightforward, simple data management.

MACFORMAT RATING 68%

Rhymes and Clichés

Is your writing too spontaneous? Add a few clichés! How about your poetry? Short on rhymes? Kill two birds with one stone.

If you have trouble thinking up rhymes, or think that you're missing a few clichés in your life, then *A Zillion Kajillion Rhymes* and *A Zillion Kajillion Clichés* are the applications you need. They are also ideal if your Mac has only 500K of free RAM, and your attention span lasts ten seconds.

Clichés is economical both with your Mac and your patience... and it's economical with your time too – once you've typed in the word you want a cliché for, it returns a list of alternatives in the twinkling of an eye.

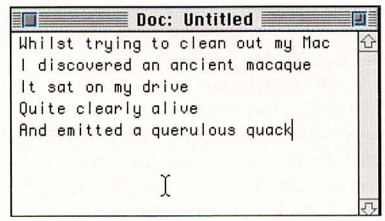
If it can't find a match straight away, it strips out any prefixes or suffixes from the word you've typed and tries again. Still no decent matches? Add an asterisk to the end of your word and the program will find clichés where your word forms the root of words in the phrase. For example, you can type 'run*' to find phrases containing 'run-around' or 'running'.

Limitations? This program is not a thesaurus. It won't match words with the same meaning as the word you specified, only those that have the same spelling. You can't add your own clichés to the dictionary, although the publishers tell you to write in with suggested additions, and there are currently 10,000 entries, so you're not likely to run out.

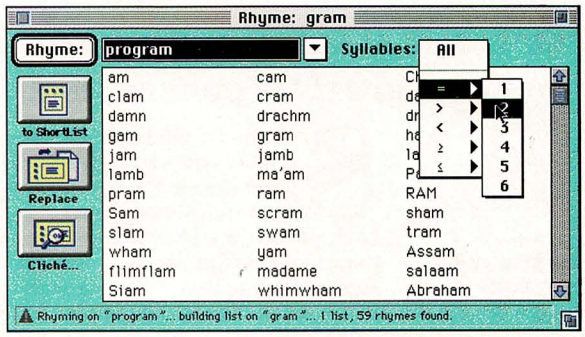
A Zillion Kajillion Rhymes is part of the same application, but runs as a separate module, which is similar in look and feel to *Clichés*. Here, the options are a little more complicated. Rhymes don't depend on spelling, and you can have single, double or triple rhymes, depending on the position of the accented syllable in the last word. You can also limit the number of rhymes suggested by specifying how many syllables they should contain.

Both *Clichés* and *Rhymes* are spectacularly easy to use, and they're backed up by the **Document** window, a text editor that can cope with up to 32,000 characters of text. It's not a word processor, but for the early stages of composition it's surprisingly useful. This is the sort of software you wouldn't think of using, unless you were already aware of its existence. It seems like a joke until you sit down with it, at which stage you suddenly realise that it can add something unexpected to your writing. It's different, less than essential, and really rather good.

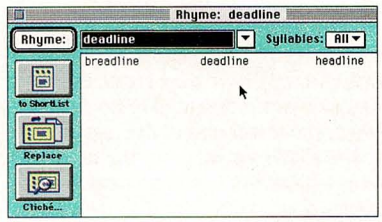
ROD LAWTON


Doc: Untitled
Whilst trying to clean out my Mac
I discovered an ancient macaque
It sat on my drive
Quite clearly alive
And emitted a querulous quack

Both *Clichés* and *Rhymes* also offer you a basic text editor for composing your words. *Rhymes* clearly can't make you a poet.



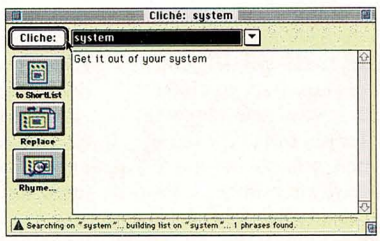
Rhymes are complicated things to engineer, but you can make things easier by specifying the number of syllables you're looking for.



The rhymes for 'deadline' include a few sobering reminders about the life of a freelance writer.

RAM TO MANOEUVRE?

Rhymes and *Clichés* take up so little RAM, you could easily use them alongside your usual word processor.



Good grief – it's the headline for that feature on throwing away unwanted System Extensions.

RHYMES AND CLICHÉS

Price: $39.95 each (or $64.90 for both).
Out: now.
Requires: any Mac, 500K of RAM, System 6.05 or later.
Contact: Eccentric Software in the US on 00 1 206 628 2687 or **www.unboxed.com**

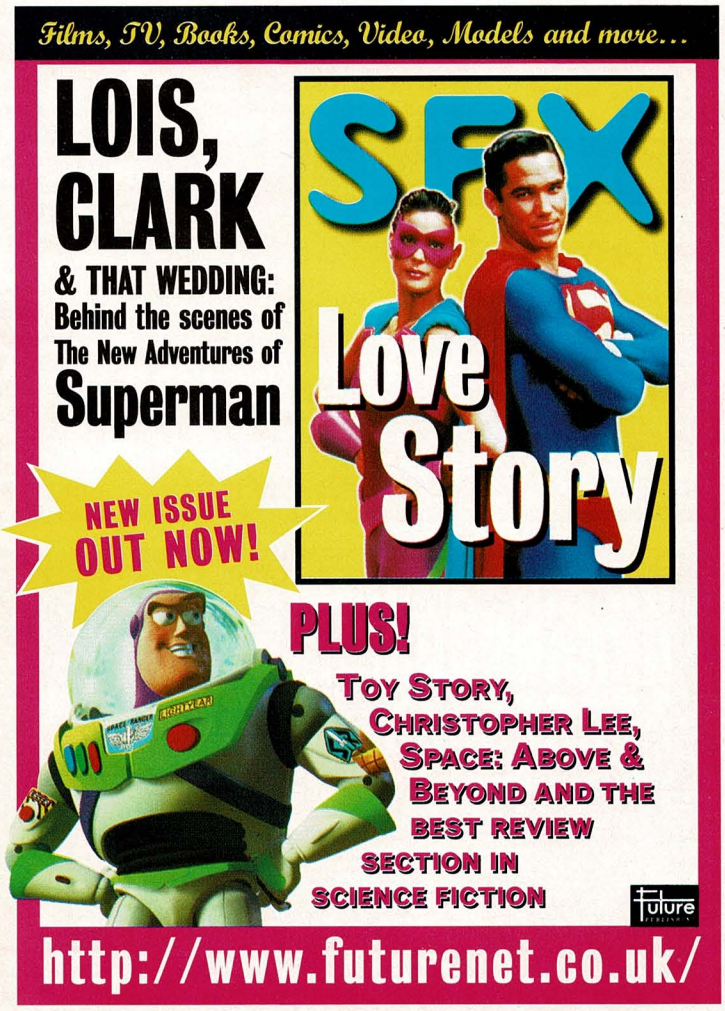
FEATURES 74%
Effective, but not hugely intelligent – clichés are found because of their spelling rather than their meaning.

EASE OF USE 96%
Spectacularly simple. If you can type, choose one button out of three, and click on it, you've mastered the whole thing.

DOCUMENTATION 91%
Very friendly and rather funny. Explains what you need to know clearly.

VALUE FOR MONEY 76%
It's cheap, it's cheerful, and it's a lot more useful that it first appears to be.

MACFORMAT RATING 78%



Cubasis

Looking for your first sequencer? You want something you're not going to grow out of. Ian Waugh finds out if the new *Cubasis* sequencer is a toy or a serious tool.

Sequencers can be either pro-level or entry-level. Pro-level programs tend to cost around £400 and, although they have more bells and whistles than a campanologist's convention, they are an expensive option if you just want to ring a few chimes rather than orchestrate the Notre Dame.

Entry-level programs are cheaper, but most are cut-down versions of their bigger brothers and come with the risk that they may have been cut down a little too much. *Cubasis*, however, has more facilities and features than *Cubase Lite (Cubase's* little brother), and seems designed to do a good job at the lower end of the market.

Installation is easy, but the program uses a hard disk install as copy-protection. Should your hard disk take a nose-dive, or you suffer from a serious System crash, it's possible the install could go with it – an inconvenience apparently peculiar to music software.

FIRST OUT OF THE BOX

Steinberg produced one of the first ever computer-based sequencers. *Twenty Four*, which later became *Pro 24*, was developed for the Atari ST and first appeared over ten years ago at a cost of £165. *Cubasis* costs less and does much more. Isn't technology a wonderful thing?

Coloured code

Cubasis itself is a reduced version of *Cubase* and contains many of this well-known program's features. Primarily, it uses the ubiquitous Arrange window. Here music recordings appear as pattern blocks, which you can drag around the window, place on any track, Cut, Copy and Paste, and otherwise play fast and loose with. This system of music arranging has become popular because it's so flexible. It makes it easy to rearrange your music, to see where all the riffs and phrases are, and to try out new ideas.

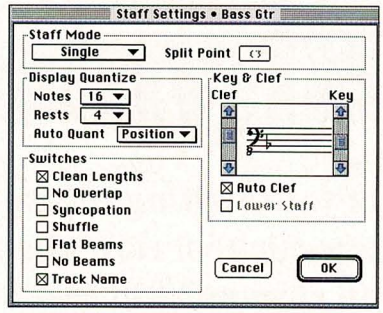
The program itself is in glorious Technicolor – work is much easier when you have an attractive interface to work within. A tear-off toolbox contains six edit tools – Arrow, Pencil, Eraser, Scissors, Paste and a Magnifying Glass. The only one of these that isn't self-explanatory is the Magnifying Glass, which enables you to Scrub through a pattern.

The tracks are listed down the left of the window, and each can be set to different MIDI outputs and MIDI channels. If you have two MIDI interfaces connected to the modem and printer ports of your Mac, you have 32 MIDI channels to play with. There is also a **Track Inspector** to the left of the tracks, where you can set the MIDI channel and program number, adjust the Volume, Velocity and Pan settings and apply a transposition.

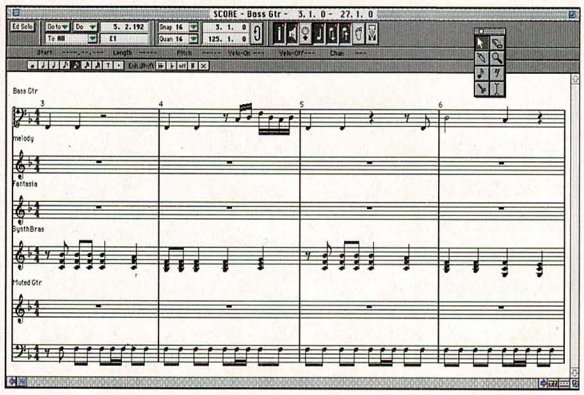
On a roll

To get a little closer to your MIDI data, there are three editors you can choose from. The Key editor shows the notes as blocks on a grid against a piano keyboard – hence the term Piano Roll editor. You can edit notes by dragging them across the grid, changing their pitch, length and position. You can also insert notes by drawing them in with the Pencil Tool. The tools include a Paintbrush and a Crosshair cursor – you can draw or paint several notes onto the grid at once with the Paintbrush, while the Crosshair cursor is used in the Controller display. This appears below the main window and displays Controller data in graphic form – it can show Volume, Pitch Bend, Modulation, Pan and Polyphonic Key Pressure. You can change the Controller data with the Crosshair cursor – for example, to create gradual increases and decreases in Volume or Velocity.

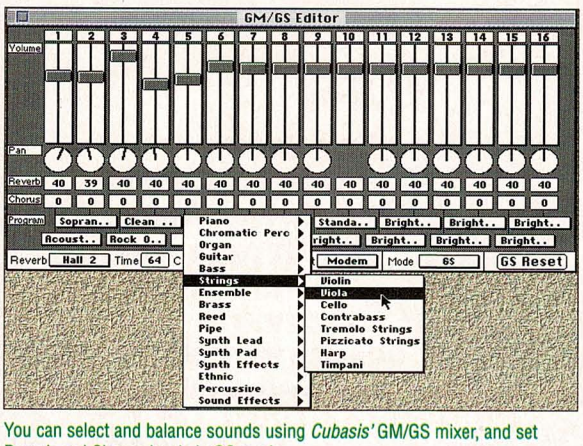
If you can read the dots and like to work with music notation, the Score editor is for you. You can edit notes by dragging them around the stave, you can select the clef and key signature, and there are several options to help make the note display look correct. Although you may talk of being note-perfect, a good performance invariably contains small differences in timing, note length and so on, and it's these interpretations that make your music interesting. A true note-perfect rendition can sound dull and flat, so if you have recorded a line that sounds perfect, it'll probably look messy when you interpret it literally as a score. The adjustments you can make include removing overlapping notes, tidying up the lengths and altering the duration of certain rhythms. You can also add text and lyrics to the score, but the program lacks music symbols – for example, dynamic markings. These would have been useful, as would a few more formatting commands. However, you can print out your nota-



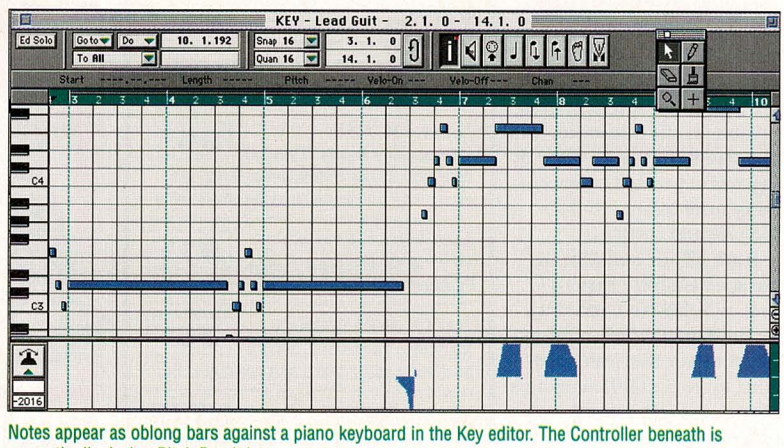
Cubasis offers a wide range of features. The Staff Settings window enables you to set the clef and key signature, and helps you make your recording look good when displayed in notation form.



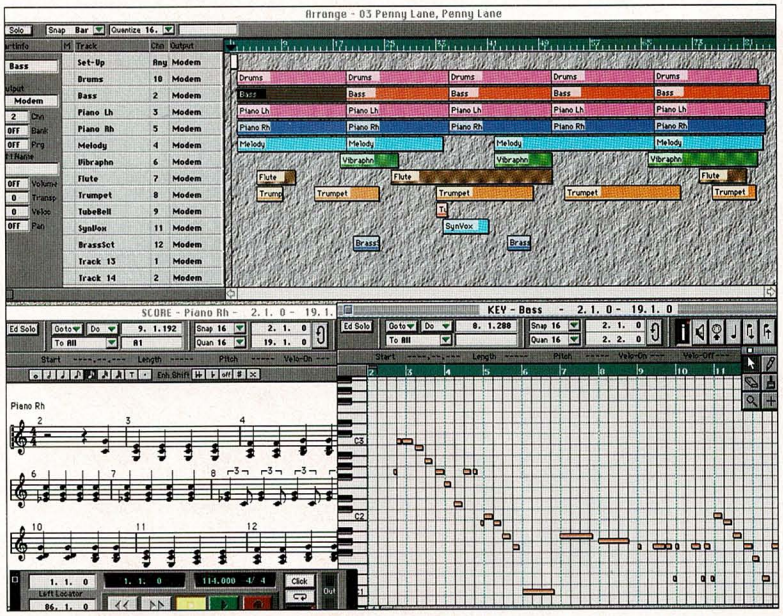
The Score editor can display a complete score. You can add text and lyrics too, and then print it out.



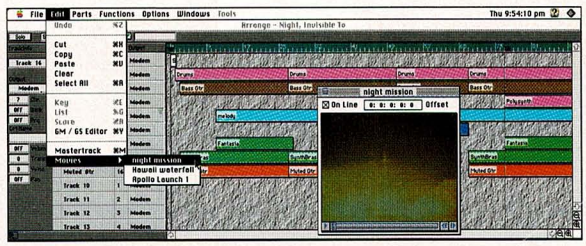
You can select and balance sounds using *Cubasis'* GM/GS mixer, and set Reverb and Chorus levels in GS mode.



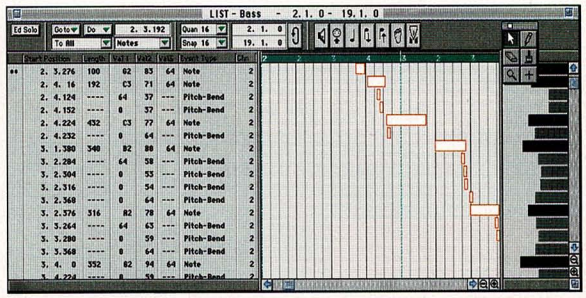
Notes appear as oblong bars against a piano keyboard in the Key editor. The Controller beneath is currently displaying Pitch Bend data.



The wealth of colour, texture and shades in *Cubasis* make it that bit more enjoyable to work with.



You can play QuickTime movies in *Cubasis* and compose music to accompany them, although you can't save the recording into the movie.



The List editor shows MIDI events in a list with graphic displays of their position and numeric value.

tion, and the results look very good.

The List editor simply shows MIDI events in a list – no cosy graphic displays here – but it does give you the finest amount of control over your data. You can alter the timing and positions, note velocity and other factors by the smallest degree.

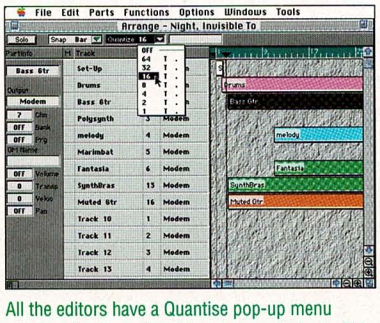
This is also where you enter events. You'll probably find it easier to enter notes in the Key or Notation editors, but it's much easier to enter and edit Controller data here. You select the type of event you want to insert from a pop-up box which includes Notes, Program changes and Controllers.

Although *Cubasis* supports SysEx Events, and enables you to record SysEx and read MIDI files containing SysEx data, there's no facility for you to enter SysEx Events into the sequencer. They show up in the List editor, but you can't edit them. This is a shame – SysEx is used to select GM, GS and XG modes and to set Reverb and Chorus levels, and once you've got the hang of it it's very handy.

Mixing it

You can select GM and GS modes and set Reverb and Chorus levels from the Mixer. You can also adjust volume levels, pan positions and select GM instruments from a pop-up menu. The changes are transmitted via MIDI, but they aren't reflected in the Inspector in the Arrange window, and vice versa. Nor can you record the changes into a track or save the settings in any way – a missed opportunity. This is very much a real-time mixer, and it highlights the desirability of being able to enter and edit SysEx messages, enabling you to play a file on any GM or GS instrument, knowing that the settings established in your MIDI file will leave the instrument ready to play your music properly.

Each editor has a Quantise pop-up menu, and an Over Quantise function is also available. This corrects your notes as normal, but detects chords and keeps the notes in them together. You can record into each editor in step-time, but it's a bit faffy. You have to select the note length from the Quantise pop-up menu and the space between notes from another menu, even though in most cases you'll want these to be the same value. A single note duration box, on screen all the time, would simplify this operation.



All the editors have a Quantise pop-up menu which only affects the notes during playback. This means you can always change your mind.

Xtras

Cubasis gives you the ability to open a QuickTime movie and play it in synchronisation with the sequencer, enabling you to record a musical accompaniment. You can't save the MIDI music and the movie together to create a standalone, though, but it's still a nice feature.

The box also contains a disk of ten excellently arranged songs in GM format, including *Layla*, *Crockett's Theme*, *Thriller* and *Air On A G String*. There's an online help system, which uses a hyper-link program to teach you about MIDI with an introduction, the 1.0 MIDI spec – which has, incidentally, been amended a little since – a trouble-shooting guide, and practical examples of using MIDI.

If this is your first excursion into MIDI land, you'll need a MIDI interface – in which case you should plump for the *Cubase* Music Starter Pac. This is basically the *Cubasis* software plus a MicroMidi interface, which plugs into the printer or modem port of your Mac and gives you a MIDI In and MIDI Out socket.

Cubasis is a big step up from the similar *Cubase Lite*. It has a few shortcomings, but it does most of the things you'll want it to do most of the time, and a few others. The Cubase Music Starter Pac is a particularly cost-effective, all-in-one solution for beginners, and there's also an upgrade path to *Cubase*, ready for when your musical aspirations finally outgrow the software. A very capable program. **MF**

CUBASIS

Price: £129. (*Cubase* Music Starter Pac £149.) **Out:** now.
Requires: Mac II, LC or better, 8Mb of RAM, System 7 or later. (You'll also need a MIDI interface, sound module and MIDI keyboard if you want to record music.)
Contact: Harman Audio on 0181 207 5050.

FEATURES 72%
Well-featured for entry-level, but with a few disappointing omissions.

EASE OF USE 82%
It has the standard *Cubase* user interface, and you can point-and-click your way through most functions.

DOCUMENTATION 82%
Takes you through most functions. The index could be better, and there's no online help for the main program.

VALUE FOR MONEY 86%
One of the cheapest on the market, and you get a reasonable wodge of features for your money. The extra £20 for the *Cubase* Starter Pac is well worth while.

MACFORMAT RATING 81%

JARGON BUSTERS

- GM: General MIDI – an agreed set of 128 sounds in the same voice slots. You can play a GM file on any GM module and know it will sound roughly the same.
- GS: Roland's version of GM. Allows for more than 128 sounds and supports effects such as reverb and chorus.
- Pan: positioning a sound or music line at a certain point within the stereo field.
- Quantisation: pushing and pulling notes so they fall on certain divisions of the beat. Corrects notes recorded out of time.
- Scrub: moving a tool (in *Cubasis* it's a Magnifying Glass) across a music part, causing the Events to play as the tool passes over them.
- Step-time: entering notes into a sequencer one at a time.
- SysEx: short for System Exclusive. Data that's exclusive to a manufacturer or instrument, which enables users to change certain parameters. Universal SysEx messages exist, which all GM, GS and XG instruments respond to.
- XG: Yamaha's extended GM format. Goes a step further than GS by making sounds more programmable.

MIP

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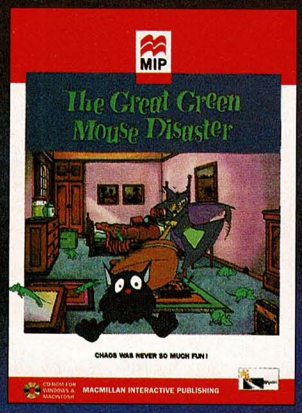
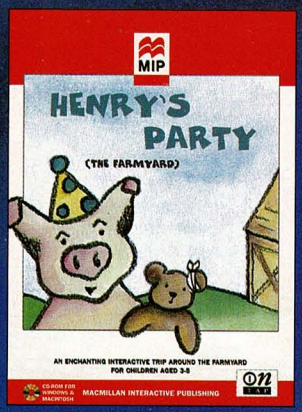
THE SECRET OF LEARNING



The Great Green Mouse Disaster
for children aged 5-11

- The fun way to learn the instruments of the orchestra and improve computer skills
- High quality hand drawn animations and specially composed music

... Quite simply Great Green Fun!



Henry's Party (The Farmyard)
for children aged 3-7

- Recommended by the National Council for Educational Technology
- Offers an unparalleled number of learning activities including telling the time, painting, and shape, letter and pattern recognition

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May Issue on sale 25 April

Zoombinis

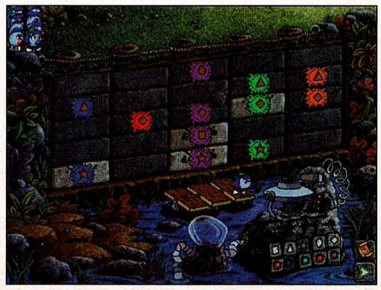
They're small, they're blue and they have springs for legs and mohican haircuts. Such wanton weirdness could only be the latest learning game for kids.

Anyone of a certain age will, for their sins, remember the Smurfs. White of bobble hat and annoying of voice, the little swines got everywhere – petrol stations, *Top of the Pops*, WH Smith... Naturally, kids just loved 'em and so thank MTV that, children's attention span being what it is, Father Abraham's devilish hellspawn soon went the way of the hula hoop...

But did they? Psygnosis virtually cloned the things for its successful *Lemmings* series, but at least had the decency to include a self-destruct option to detonate them. Now, with one eye on edutainment and the other on the games market, Brøderbund has decided that small, blue and cute is the way to go for the eponymous heroes of its new learning game, *Zoombinis*.

And, apparently, Brøderbund has also decided that the moss that's gathered on the Smurfs' rolling stone is the way to go. *Zoombinis* half-inches the idea of *Lemmings* – you have a certain number of creatures to get from one screen to the next – and adapts it for the children's market. Beginning with 16 zoombinis in all shapes and guises, your mission is to guide this newfound brood across bridges, through ravines, into forests and over mountains until you reach the promised land. But while the secret of *Lemmings* was to use specifically skilled creatures at specified moments to build bridges, dig tunnels and so on, the trick to *Zoombinis* is simple logic – and that's where the edutainment comes in.

Each lushly illustrated screen centres on a logic game. With various monsters to be avoided and the clock ticking down, you must choose a path for your heroes to traverse. Unfortunately, only certain zoombinis are able to travel certain routes. Illogical though it sounds, hair style, nose colour, mode of transport and number of eyes are all intrinsic to the route your zoombini should take. One eye and roller skates? Take the left path. Fluttery eyelashes and a ponytail? The right-hand lane. Sharpened fangs and drenched in bull's blood? Sorry, you want the *Doom* review.



All that's missing is Stuart Hall's dulcet tones from this recreation of *It's A Knockout's* finer moments.

Mount Rushmore meets Indiana Jones for this, the first in the trials of the zoombinis.

Cyberpunk zucchini? Whatever on Earth they are, they spell trouble for your zoombinis.

It's a simple equation – take wrong path, fall off bridge, take different path – and should teach your kids simple object association. However, while *Zoombinis* starts off quite easy – those with spiky hair take the top bridge, all others take the bottom – it's a false sense of security. Every few screens, a resting place (replete with point-and-clink storybook effects) is included for you to take stock of your multi-coloured troops. Unfortunately, unless you have the full complement of 16 zoombini under your watchful eye, it's back to the beginning to bring a fresh batch through the challenges you've only just completed. It should be easy, but when the difficulty level is then automatically upped and the solution changed, the addictive frustration that made *Lemmings* such a smash in the games world is reproduced here. Nerve by very, very frayed nerve...

It's this constantly changing, always challenging aspect of *Zoombinis* that lifts it above the level of a mere *Lemmings* clone and most other attempts to merge learning and gameplay. Maybe Brøderbund is secretly planning an adult version of *Zoombinis* and is ensnaring the kiddiewinks while their minds are young and malleable. With this combination of gameplay, animation and educational value, who cares? *Zoombinis* is almost good enough to make you forget the Smurfs ever existed. Almost. **MIKE GOLDSMITH**

Use the DIY identikit screen to mix 'n' match the appearances of your stalwart seafaring progeny.

Figure out what combination of toppings the wood creatures want on their pizza to get to the next stage.

IF BOOKS COULD TALK...

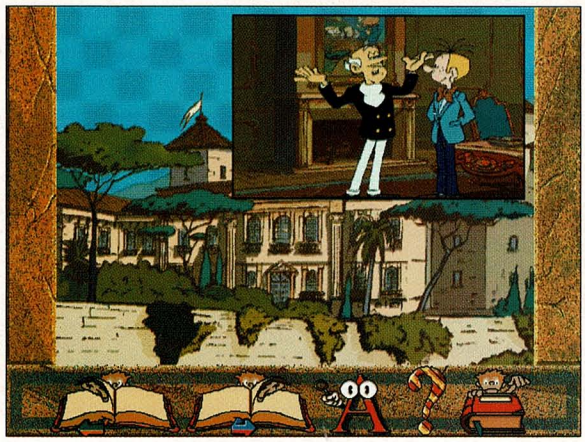
Zoombinis isn't the only product that Brøderbund produces for kids. Try its excellent range of Talking Books, such as *The Tortoise and the Hare* and *Harry and the Haunted House.*

Price: around £30. **Out:** now.
Requires: LC II or better, 8Mb of RAM, System 7.0.1 or later, 13-inch, 256-colour monitor, double-speed CD-ROM drive.
Contact: Brøderbund on 01429 273029.

MACFORMAT RATING 92%

Playtoons: Spirou – The Mandarine Prince and The Stone of Wakan

Comics bound onto the Mac once again, but this time you're in control of the story.



A cartoon within a cartoon as Prince Sunkist pontificates for poor Fantasio.

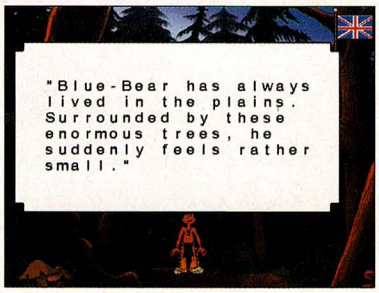
ONCE UPON A TIME IN THE WEST...

The Stone of Wakan is only the tip of European comics' love affair with the Wild West. Recommended reading has to be Jean 'Moebius' Giraud's *Lt. Blueberry.*

From the smell of the wood pulp to the ink that would transfer almost mystically from page to finger, comics are inextricably bound to our collective childhood. But, as with most popular culture, the tyranny of the English language dictated how your pocket money was spent. Unless a comic was British or American, it had no place on our nation's newsstands.

Which is a shame. *Tintin* and *Asterix* are but the tip of an iceberg of European cartoon talent that has long gone untapped. Thanks to Sierra's *Playtoons* range, however, the world of French comic strips has come to your Mac.

These comic adaptations, *Spirou – The Mandarine Prince* and *The Stone of Wakan* are, respectively, the fourth and fifth releases in the *Playtoons* series.



It's not all point and click – the frequent speech bubbles relate the wonderful tale of Blue Bear at a steady pace.

They are, however, much more than mere animated storybooks.

The Mandarine Prince

The hero of *The Mandarine Prince* is called Spirou. A feisty hybrid of Tintin and Jimmy Olsen, Spirou was last seen in *The Case of the Counterfeit Collaborator,* but this time it's a more intriguing case for the investigative cub reporter.

Spirou's arch-enemy Don Vito Bad-A-Luck has ironically had a spot of good fortune. Hired to protect Princess Clementine by her father, Prince Sunkist, Don Vito enlists the aid of Spirou and his dim compatriot, Fantasio. Inevitably, there's more to these machinations than meets the eye.

Click on the **Story** option and you can watch and listen to this captivating tale, narrated with animated windows and spoken text balloons. Hidden animations abound, but, as the reasons behind Don Vito's scheming become clear, such frills are superfluous.

Playtoons also enables you to create your own stories. The **Construction** option offers a full palette of characters, backdrops and animations with which to create your own animated comic. The characters are easily guided around your stage and even interact with the other cast members.

The Stone of Wakan

If a trick works, why change it? The setting and style are different, but *The Stone of Wakan* is more of the same. Follow the fortunes of the young cub Blue Bear as he quests to become a fully-fledged Indian brave. With the help of the cheeky Laughing Otter and

NN 'n' N Toy Makers

Watch out, Santa's elves, there's a new toy maker in town...

STEAM POWERED

Discover how Nikolei and Neow-Neow get on in the somewhat different world of locomotives in predecessor, *Nikolei's Trains* – reviewed in MACFORMAT 32.

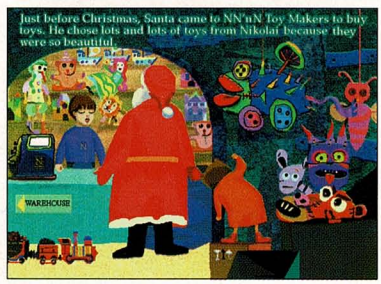
Nikolei is a strange lad. Cursed with Manga eyes and a somewhat upright gait, he's lumped with a cat called Neow-Neow for a best mate and, for his latest adventure from Corel, a toy maker's shop to run. Not exactly *Grange Hill,* is it?

And thank Tucker for that. *NN 'n' N Toy Makers* is a flight of imagination that escapes the dour drudgery of everyday life and takes off for the North Pole. Nikolei and Neow-Neow head north with the idea of selling toys to Santa just before the busy

Lead Nikolei around the tissue paper houses back to the Toy Makers.

December period. Using the interactive storytelling, the pair soon have Saint Nick knocking at their door. However, success brings with it a high price...

Yes, greed soon seizes Neow-Neow and, as the lavishly illustrated pages detail, before long he's churning out


Just before Christmas, Santa came to NN'nN Toy Makers to buy toys. He chose lots and lots of toys from Nikolai because they were so beautiful.
WAREHOUSE

With the glaring absence of a local Toys 'R' Us, Santa avails himself of Nikolei's wares.

shoddy toys. A plot twist or two later – not bad for an 11-page story – and Neow-Neow is wrecking Santa's workshop and breaking poor Nikolei's heart. It's a simple story, aimed at the four to ten age range, and its Eastern European animation, light-handed moralising and sophisticated storyline and characters all impress.

However, *Toy Makers'* real strength lies in its education-minded depth.

The teepee is just one of the settings in which you can pose *Wakan's* cast of characters.

the Stone of Wakan, Blue Bear must travel to the Mountain That Smokes and defeat the Thunder Spirits.

The Stone of Wakan is a sophisticated story. It lacks the intrigue of *Mandarine*, but has characters to die for. Sophisticated language litters the text, but always with clear context or explanation, making it suitable for the full projected age range of four to ten. And if it's still not to your liking, use the **Construction** option to do it yourself.

Spirou – The Mandarine Prince and *The Stone of Wakan* are fine examples of how good children's titles can be. And just think of how much you can save on comics.

MIKE GOLDSMITH

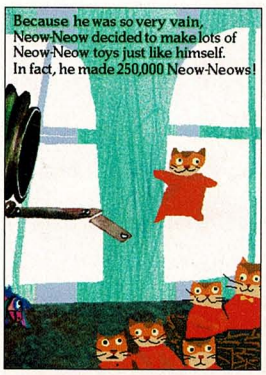
You can read or you can construct – but with *Playtoons* there's so much more to it than that.

He might look innocent enough, but Don Vito Bad-a-Luck's got evil on his mind for sure.

MANDARINE & STONE OF WAKAN

Price: £24.99 each. **Out:** now.
Requires: Quadra or better, (accelerated for PowerMac), 8Mb of RAM, System 7.1 or later, 256-colour, 13-inch monitor, double-speed CD-ROM drive.
Contact: Sierra on 01734 303171.

MACFORMAT RATING 88%


Because he was so very vain,
Neow-Neow decided to make lots of
Neow-Neow toys just like himself.
In fact, he made 250,000 Neow-Neows!

Teenage Mutant Ninja Neow-Neows? Mighty Morphin' Power Neow-Neows? This could be one Christmas craze that doesn't quite catch on...

Interactive storybooks usually entail some pop-up animation and little else. In *Toy Makers*, an innocent click can bring about anything from an option where you can design and print out snowflakes to a compass-led maze game. It shows thought and attention to detail by the developers – catering for the full four to ten age range – and puts *Toy Makers* on a well deserved pedestal. Just make sure Neow-Neow didn't build it.

MIKE GOLDSMITH

NN 'N' N TOY MAKERS

Price: £23.50. **Out:** now.
Requires: LC III or better, 8Mb of RAM, System 7 or later, 256-colour monitor, double-speed CD-ROM drive.
Contact: Corel on 01703 814142

MACFORMAT RATING 80%

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Marty and The Trouble With Cheese

Bellow at your Mac for the right reason! Who said edutainment couldn't be fun?

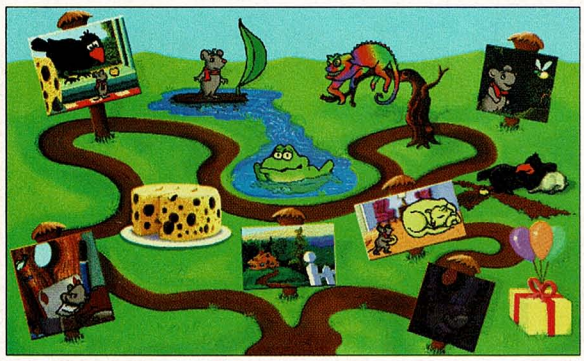
With the absence of rodent-sized grappling hooks, Marty only barely climbs the cheddar Everest.

MICROPHONE

The microphone that Maxis supplies is PC only, but you can get hold of other mikes for your Mac. A good one is supplied with The PlainTalk Software Kit, which is available from Apple dealers for around £33 – the part number is M2844ZA.

What *is* Marty's trouble with cheese? We're stumped, which is perhaps just as well. If we all shared Marty's personal hang-ups, the chance to share in his delightful rodent-ridden adventure would've passed the Mac-owning public by.

Released by Maxis, who taxed your brain with the *Sim* range of software, *Marty* might boast the now-standard interactive storyline and requisite cutesy characters, but it arrives in the already crowded kids' edutainment market offering two extra bonuses. First off, Maxis proudly claims that *Marty* is designed for the two to five year old age range – and as anyone with two year olds will know, that's more than a little ambitious. Second, nestling snuggly alongside the CD-ROM is a free microphone. Unfortunately, the cursed item is designed to work with PCs only.



From wake up call to night time kip, this map shows the busy birthday that Marty has to contend with.

Okay, you can enjoy Marty as a simple storybook without a microphone, and something given away as a freebie can't be that expensive – but it's hardly attractive to the Mac purchaser that *Marty's* cover sports the legend, 'FREE Microphone Inside! IBM PC compatible only.' It's just as well that *Marty* is so good, especially once you've attached your own mike.

Marty and The Trouble With Cheese is the tale of a spirited mouse and his quest to recover a misplaced wedge of cheddar. The ensuing adventures, which take place on Marty's birthday, involve various wildlife – crows, frogs, chameleons, fireflies and your child.

While most interactive storybooks revolve around a basic point-and-click interface – look for the slightly conspicuous graphic and, guaranteed, it'll move – *Marty* eschews mouse for microphone. After a simple installation, instead of frantically mouse-clicking, your child can simply shout 'Hop!' to launch Marty from lily pad to riverbank, or 'Yellow!' to coerce the fractal-emblazoned chameleon into revealing his secrets. Swapping the alienating Mac interface for a microphone is a masterstroke – and it works remarkably well. Using it, your still-toddling child might actually come to view the Mac not as a potential enemy, but as a true learning aid.

The story itself is no great shakes – Marty's predictably cute and scoffs the

Green Bear

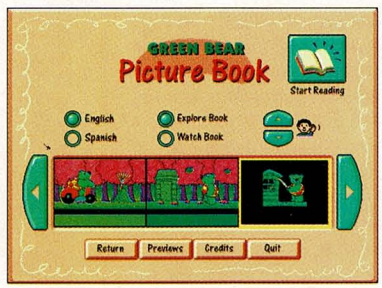
Roses are red and violets are blue, so bears must be... green?

ANIMAL CRACKERS

Green Bear is the third children's book by Alan Rogers to make the transition to the Mac. Take a look at issue 32 of MACFORMAT for reviews of *Red Rhino* and *Blue Tortoise.*

Colours. Great things. Vermillion, titian, jonquil... Drunk with syllables and pregnant with meaning, there's at least 256 of them on your Macintosh, twice that number in a Dulux catalogue, and as for a car showroom... When it comes down to it, however, there are only three main players and, if you're still of the short trousers persuasion, these are the colours that matter.

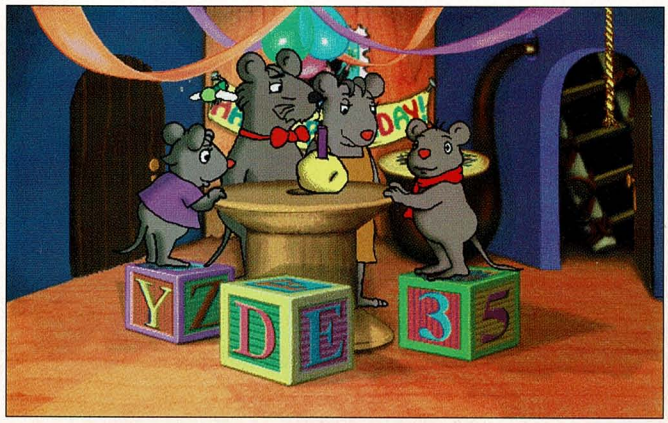
Children's books, comics and TV have all realised this simple fact – witness the carefully colour-coded *Thomas the Tank Engine* stories. So, for its children's CD-ROM range, Corel has wisely chosen to adapt Alan Rogers' books. A good move, considering the glut of disappointingly poor edutainment currently sprawled across the high street shelves.



The simple but rather effective Option screen is easy enough for the tiniest toddler to understand.

If you're feeling sadistic, rub on the snow bear's tummy to make his coal nose pop off.

It's a shame, then, that *Green Bear* hasn't made the transition to the Mac too successfully. Intended for children between the ages of three and six, and a very reasonable £23.50 to buy, *Green Bear* satisfies the age and value-for-money requirements but precious little else. The idea is simple: follow *Green Bear* on his forest adventures, constantly painting and repainting his house to match the colours of the seasons. Once you've followed the story, and clicked around each of only seven screens to find those ubiquitous hidden animations, you can choose to



Nope, not an unexploded bomb, but a birthday cheese(cake) complete with candle.

birthday cake at the storybook's climax (just say 'Blow!' to put out the candle). But, given the projected audience, notions of plot and character development can be understandably, if reluctantly, shelved. *Marty* might focus on simple cause-and-effect commands, primary colours and basic interaction, but, with a meagre 11 screens, £30 is a lot to pay for a basic storybook that would only be a tenth of the price if on wood pulp – or even less from a library. While congratulations are due, breakthrough in aural interaction or not, it's as well the mike doesn't register swear words. **MIKE GOLDSMITH**

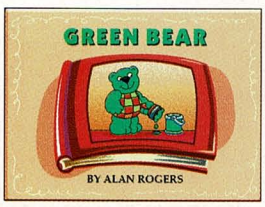
It's probably the dream bedroom of every schoolboy, but that bed doesn't look too comfy.

Bellow 'Hop!' into the microphone to get Marty to jump from the rock to the riverbank.

TROUBLE WITH CHEESE

Price: around £25. **Out:** now.
Requires: LCII or better, 8Mb of RAM, System 7 or later, 13-inch, 256-colour monitor, CD-ROM drive. Microphone optional.
Contact: Maxis on 0171 490 2333.

MACFORMAT RATING 81%



Green Bear looks mischievous. It's all very well and good smiling now, but if that paint stains my new Axminster...

paint black and white colouring pages of the screens you have just seen.

For the pre-schooler it's fine: a simple, attractive story, bright, lively colours and appealing graphics. But for the more inquisitive five or six year old, the attraction of watching Green Bear repeatedly paint his house orange will swiftly fade – along with your hard-earned cash. Maybe a *Thomas the Tank Engine* video and a Dulux catalogue are a better bet... **MIKE GOLDSMITH**

The colour-blind CD-ROM reviewer makes a complete pig's ear out of, erm, Purple Bear's colouring option...

GREEN BEAR

Price: £23.50. **Out:** now.
Requires: LC III or better, 8Mb of RAM, System 7 or later, 256-colour monitor, double-speed CD-ROM drive.
Contact: Corel on 01703 814142.

MACFORMAT RATING 70%

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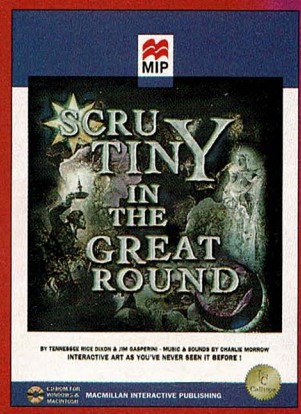

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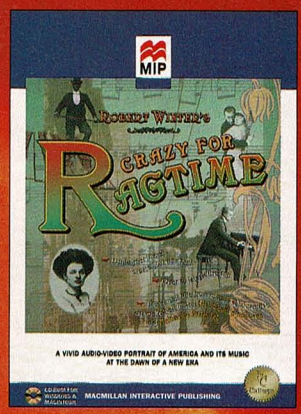
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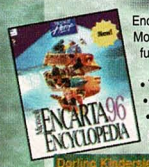

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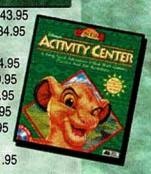

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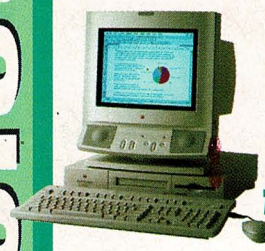

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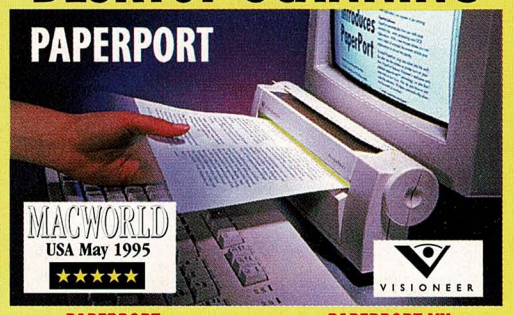

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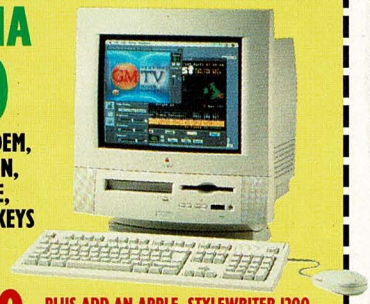

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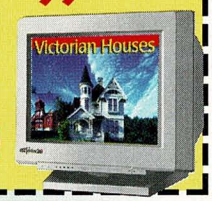

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World party

You can find a demo of *World Reference Atlas* on the Cover CD

It's the end of the world as we know it. CD atlases offer new perspectives on how the Earth looks and behaves today. Richard Hill assesses the newest.

Any well-made atlas is a gorgeous thing to own. Relax by the fire and leaf through the pages of the world; see how natural forces have shaped the globe and learn the important basic facts about the countries that are remodelling it now. They're also dead handy if you need to know the capital of Botswana.

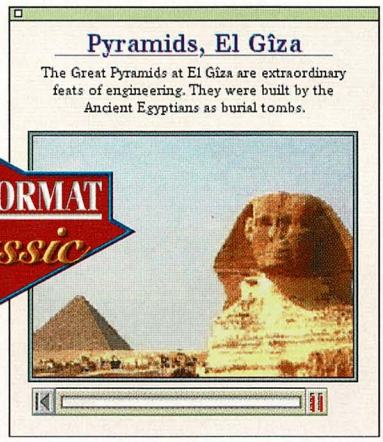
The atlas is a straightforward device that gives you different ways of seeing the world. While the basic format of delicately-detailed patchwork maps has been established for centuries, the makers of CD-ROMs are trying to offer superior alternatives to books in many areas of interest, so why should the atlas be any different?

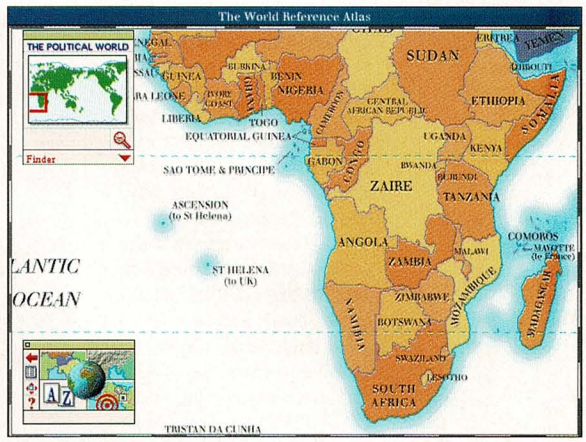
The challenge for the designers of the CD-ROMs we look at here is to find ways to improve on near-perfection. After all, large-scale maps you can survey at your leisure seem to offer everything you need.

The approach taken by all the discs is to offer the same basic map and information structure as a book, but add extra value through features that only your Mac can offer. And in some cases the discs go beyond the purely functional aspect of the atlas, using QuickTime video to become a tourist's guide to the people and customs of the world.

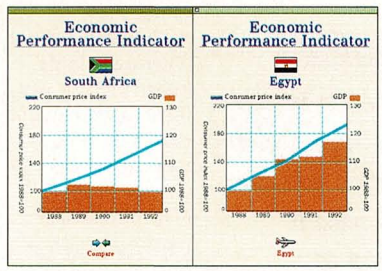
In some cases the discs go beyond pure atlases, using QuickTime video to become a tourist's guide to people and customs around the world

The upbeat rhythms of dance music and sharp photo-montage video sequences are definitely what you'd expect from a CD-ROM that's out to impress, rather than the quiet contemplation more normally associated with an atlas. And that's what you get with Infogrames' *Atlas of Europe*, which sets out to be thoroughly modern. The title screen's main image, a young European offering you the world in one hand, is a dramatic opening visual statement. Appropriately enough, at this stage you get to choose between three European languages in which to view the contents.


Pyramids, El Gîza
The Great Pyramids at El Gîza are extraordinary feats of engineering. They were built by the Ancient Egyptians as burial tombs.



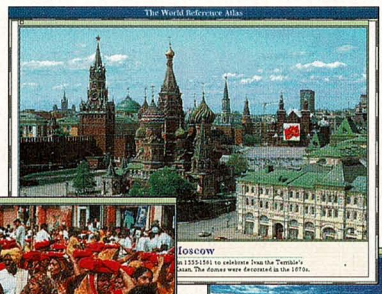
There are several layers of maps you can view in the *World Reference Atlas* – from the whole planet, through individual countries right down to regions.

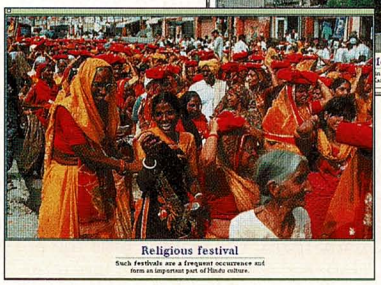


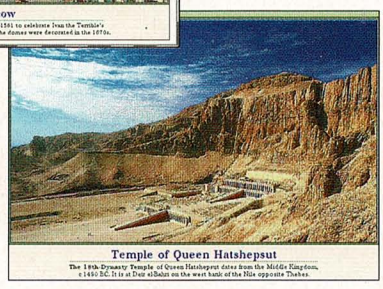
You can use *World Reference Atlas* to get direct comparisons of facts, figures and information relating to any two countries in the world.

Dorling Kindersley is well-known for its mature, clear presentation, and the *World Reference Atlas* is exactly what you'd expect. This is a disc that feels like part of a collection, fitting in among DK's widely appealing titles including the *Encyclopedia of Nature*. Its tasteful opening sequence settles on a menu screen outlining the various sections of the disc, including an A to Z of countries and maps in political and physical formations.

Of the three, Mindscape's *World Atlas 6* is most obviously a computer program, with a progress bar showing how long to wait until it loads and a neat arrangement of windows as the main screen. The single large frame and two supporting areas can each display a different one of the program's many sections, which you select from a battery of pull-down menus.






Temple of Queen Hatshepsut
The 18th-Dynasty Temple of Queen Hatshepsut dates from the Middle Kingdom, c1450 BC. It is at Deir el-Bahri on the west bank of the Nile opposite Thebes.

World Reference Atlas offers stunning photography that looks fantastic on your screen.

Maps and legends

The creative use of maps, giving you information in an easily digestible format, is at the heart of any atlas. DK's *World Reference* maps are superb – immediately attractive and comfortable to read and interpret. Your world view zooms in on a country, then further in for a specific region. The regional maps name towns and features in far greater detail than the other two.

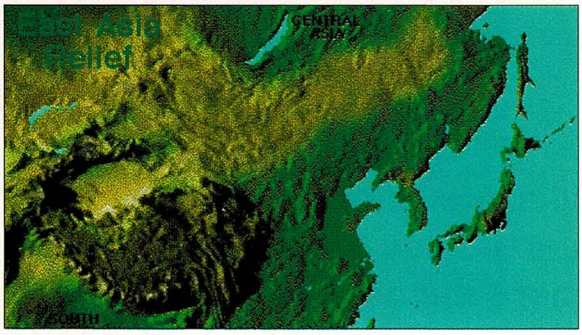
Each layer of detail offers different additional features, the logic being that you only need to refer to certain things at particular points. So each

CD-ROMs reviewed:
Atlas of Europe
World Atlas 6
World Reference Atlas

MOSCOW MULTIMEDIA

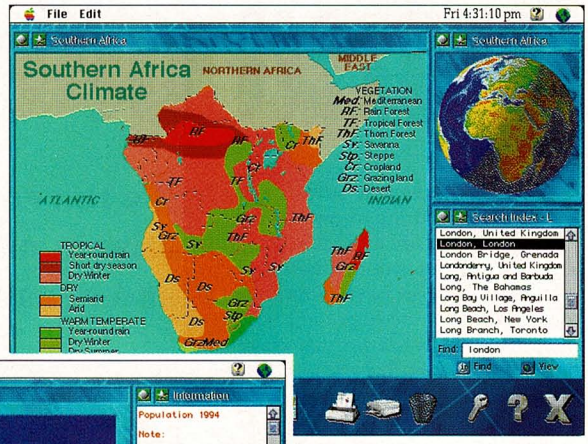
Here's proof that multimedia is becoming a worldwide phenomenon: if you go to the Kremlin in Russia, you'll find CD-ROM tourist guides of Moscow for sale among the books and postcards.

Continued on next page

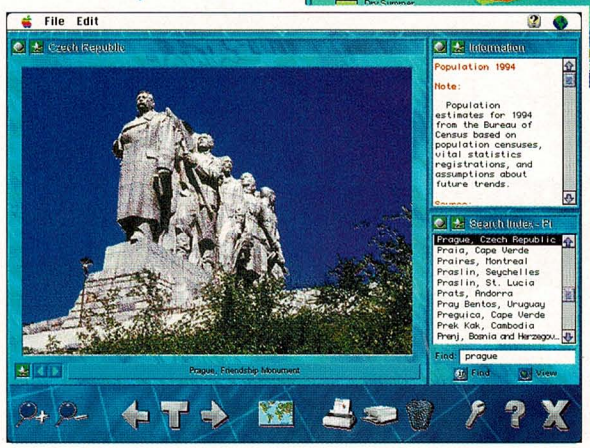


World Atlas 6 shows you the globe in many different forms. More, in fact, than you thought possible. That's a relief.

World Atlas 6 has lots of information and it's all clearly presented alongside maps you can read without effort.



World Atlas 6 has plenty of tourist-style photos, like this one of a monument in Prague, but the presentation is sadly unmemorable.



national map also has a brief introduction to the country and offers photos and video clips that give a taste of the locale, while the regional maps unveil a search facility – type in the name of a town and the program will point it out on the map for you.

Atlas 6 cannot match the sophistication of *World Reference's* beautiful illustrations, but its maps are clear, with a good balance of information relative to each map's scale. The maps are stored on the CD-ROM in the form of instructions to draw the map rather than straightforward but potentially large image files, so you have to watch your Mac redraw the map each time you change it. This doesn't take any longer than *World Reference's* rather sluggish loading of its rich graphics, and it has an important advantage. Because the map drawing instructions are kept as separate layers – one for town names, one for roads and so on – you can pick which layers you want to display, enabling you to customise the maps for your own needs. Much more could have been done with this imaginative facility – more layers to choose from would have helped greatly.

World Reference Atlas bestrides the Earth like a colossus, giving you the information you need, when you need it

Atlas 6 also boasts many maps of major cities across the world, something neither of the other discs offers. These area wasted opportunity, showing you only the physical shape and road networks, plus assorted tourist landmarks. There's no supporting information about each city.

The maps in *Atlas of Europe* are poor. Primitively drawn compared to the surrounding trendy graphics, they appear clogged because of bad judgements, for instance making the icon for each city too big. Considering this disc deals only with Europe, you'd expect that it would give much closer detail than *Atlas 6's* necessarily broad world view, but the ultimate scales of both of these atlases are, in fact, virtually identical.

Half a world away

The use of facts and figures is where you really start to learn from an atlas, discovering politics, and the ebb and flow of trade and crops. You begin to see that people in other lands are fascinatingly similar to us, but also different in many ways.

So how is modern Europe strengthening ties between ourselves and our neighbours? Don't look to *Atlas of Europe* for the answers. Its statistics are so closely linked with its maps that they end up as one: each set of figures is presented in easily understandable form as a map. Select another statistic and see the colours fade and alter to reflect the new data. But the quality of information within this consistent presentation format is insulting.

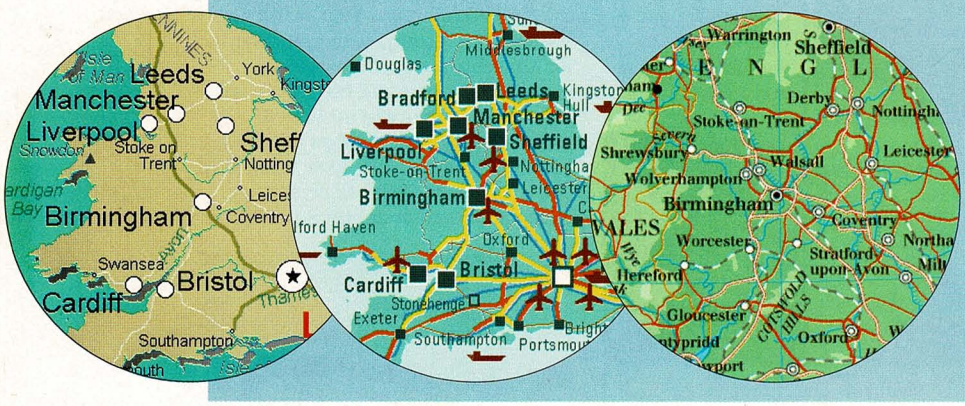
You can glean some basic facts, but there's no attempt to help you use what you've learned. A map enticingly headed 'History of the EU', for example, shows the spread of countries joining the European Union from 1957's Treaty of Rome to the present. But how and why did this development begin? What are the countries' joint aims for the Union, and what are the issues that consistently threaten to fracture it? None of these fundamental questions is dealt with.

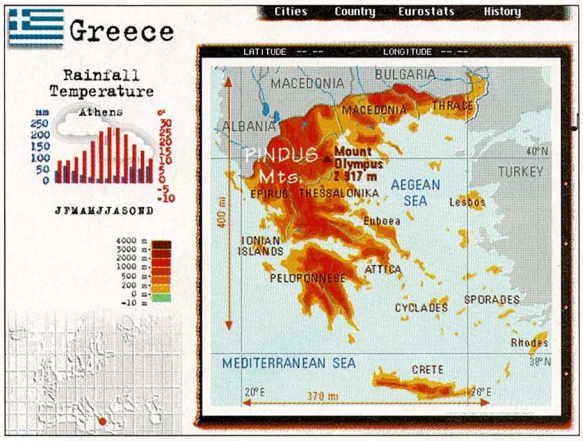
Atlas 6 suffers from a similar lack of context, but it offers a variety of statistics so wide it's difficult to know where to start, or which methods to choose when making direct comparisons between countries. If you want to know the world leader in almond exports, *Atlas 6* is the disc for you. These details are given as charts or in plain text form, and of course you can see both at once using the multiple windows. But while there's loads of detail, a sense of the bigger picture is missing.

It's up to *World Reference* to demonstrate the difference between spewing out facts and enabling you to understand them. The team behind the program has done its research and interpreted the data for you. You're briefed on the history of each country and

IT'S ALL IN THE DETAILS

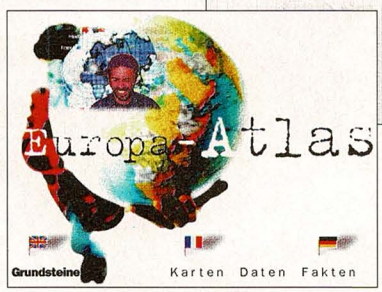
We focused on Richard's old stamping ground in Birmingham to give you an idea of how much detail you can expect from each atlas. *World Atlas 6* (left) and *Atlas of Europe* (centre) each get so far in you can still see coastline; but *Atlas 6* manages to keeps the map uncluttered. *World Reference Atlas* (right) has a well-balanced design and gets in so close, you can almost see Rich's old back garden.





Each country has its fair share of facts and figures, but the presentation in *Atlas of Europe* is so unimaginative that it's of very little use.

Atlas of Europe is full of sharp graphics and type, a bid to present the youthful face of our continent.



The Eurostats section shows comparisons between countries in a map format that's easy to follow.

what's important about it through a series of clear, concise articles.

Information is organised with military precision. Once you've selected a country to look at, a table with rows of icons appears, each icon representing a different part of the make-up of a country – politics, the environment, the media. If the meaning of the icon isn't apparent, move your cursor over it and a text area will indicate what it is. Each icon conceals a bounty of simply-presented information, and you're often given the chance to make direct comparisons between one country and another, calling up charts that show the relative success between two nations in a given area, such as economic performance. But it only means something because the developer of this atlas has gone to the trouble of setting context. It's structured so you're able to read an introduction to each subject before you look up the figures.

If you want to know the world leader in almond exports, World Atlas 6 is the disc for you

People of the world unite

The CD-ROM atlases also attempt to give you a richer flavour of the lands you're discovering – more than their printed equivalents usually would. They're becoming a cross between an atlas and a tourist guide.

The *World Reference* national maps offer a light smattering of photography and video from many countries, the detailed photographs in particular looking vividly luminescent on your Mac's screen. Captions (or video narrative) explain the choice of the image, offering still more background.

Atlas 6's videos and photos are more obviously tourist-style, with a sincere voiceover explaining that the UK consists of Buckingham Palace and the Tower of London – but *World Reference* too occasionally falls into the trap of showing only the obvious sights.

And as you'd expect by now, there's more to *Atlas 6* – sound clips of national anthems play, while you look up the flag of each nation. Everything is there, but again you have to work at putting the pieces together. The photos, for example, have perfunctory captions stating only the name of the building and its global location.

In *Atlas of Europe*, the only way you're going to see the continent is as a map – there are no videos and no photographs. There are gimmicky presentations, including a section that shows what the people of each country are doing at any time. You set a clock, click on a country and one of four tiny animations start up: so we know that at eight in the evening, the Germans eat while the French relax. The suggestion that this sheds any light on your understanding of a different culture is laughable.

World leaders

We're back where we started after travelling around the world in three discs, but which gives you the best idea of what's waiting to be explored?

With youthful graphics and typography, *Atlas of Europe* promises a bright, up-to-date picture of European society – but falls hopelessly short of being any actual use. Many features are hidden away behind animated icons that give little indication of what will happen when you click on them; you won't even find that some features are there until you spend some time clicking around the screen haphazardly. Crudely thrown together and short on both information and context, this is not the reason you spent a thousand pounds on a gleaming multimedia system. In light of this, some might say that making the selection button to quit the program into a video clip of a man yawning is a profound act of courage.

World Atlas 6 is an enthusiastic puppy of a program, accommodating your desire for information with a flood of figures and a wall of video. But the missed opportunity of exploiting the control you have over the atlas maps is typical of the production team's two-dimensional approach to a three-dimensional world. Bare statistics are not enough.

World Reference Atlas bestrides the Earth like a colossus, giving you the information you need, when you need it, and its maps and graphics are mouth-watering. An asset to any CD-ROM bookshelf, it's the leather-bound volume to treasure against the others' discount store paperbacks, plus it has the added bonus of a zoom facility so you don't have to squint. **MF**

With youthful graphics and typography, Atlas of Europe promises a bright, up-to-date picture of European society

MORE...

Dorling Kindersley produces a wide range of multimedia information and education products. Those recently reviewed in MACFORMAT include the *Encyclopedia of Nature*, which scored 85% in issue 36, and childrens' title, *PB Bear's Birthday Party*, which scored a Classic Award winning 92% in issue 35.

WORLD REFERENCE

Price: £39.99. **Out:** now.
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Contact: Dorling Kindersley on 0171 753 3488.

MACFORMAT RATING **90%**

WORLD ATLAS 6

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Requires: LC or better, 4Mb of free RAM, System 7, 256-colour, 13-inch monitor, CD-ROM drive.
Contact: Mindscape on 01444 246333.

MACFORMAT RATING **62%**

ATLAS OF EUROPE

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MACFORMAT RATING **38%**

DO YOU FANCY SOME, PAL, OR *WHAT?*

This issue of *Total Football* is so hard it promises to make Begbie out of *Trainspotting* look like a shandy drinking girl, and if THAT'S not enough to convince you, we'll chuck in a **COMPLETELY FREE** stonking FA Cup photo supplement for good measure.

It's rough and tumble all the way in the May edition of *Total Football*, as *Stuart 'Psycho' Pearce* heads a line-up of the game's toughest players in our special Hard Man Issue. Joining him are the likes of *Julian Dicks*, *Tommy Smith*, *Norman Hunter* and – yes – *Vinnie Jones* as *Total Football* celebrates everything that makes Football a MAN's game, as opposed to flouncy ponce sports like cricket and hockey. And yachting.

We'll be bringing you **EXCLUSIVE** interviews with *Dicks*, *Pearce*, *Hunter* and *Smith*, along with the definitive guide to the world's hardest players, history's toughest tackles, and lots of other punchy (geddit?) stuff.

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SHAREWARE AND PD

Once again, Derek Smith, MACFORMAT's aficionado of shareware, takes you on a tour of his latest Internet delvings and discovers that politics is the hot topic.

Last night, I had a dream. I arrived at a car sales showroom to buy a new car. There were lots to choose from, but all too expensive. Then I noticed that in the corner was a small but superficially attractive car, which everybody else was ignoring. It sounded ideal and the price was just right at $25, no credit cards accepted, and please don't send cash in the post.

I duly bought it and drove it home, only to discover that the steering wheel didn't work, brakes won't be implemented until the next version, and there was no warranty.

I was awoken by the editor coming back from a liquid lunch, to find myself halfway through writing this month's shareware pages. It was then that everything became clear, and I made the connection. I'd come to work without my trousers.

Barrack

ARCADE GAME

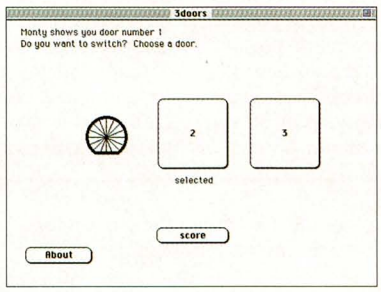
Shareware $15

Ambrosia has done it again. Following the brilliant *Maelstrom*, *Apeiron* and *Swoop* (still played in our office), it has come up trumps with yet another stonker game.

In *Barrack*, balls merrily bounce around the screen, while you operate a mouse controlled laser gun. So you have to shoot the balls, right? Wrong! In a shock departure from all known arcade game rules, you don't shoot them – in fact, the whole point of the game is *not* to shoot them.

You can orientate your laser horizontally or vertically. Then, when you fire, beams stretch out towards the sides of the screen. If they reach the sides before a balls hits them, you create an impervious boundary. If all the balls are to one side of that boundary, the empty portion is blocked off. The aim of the game is to block off 80% of the screen, whereupon you progress to the next level, in which you face faster balls. If a ball hits your beam before it makes it to the screen's edges, you lose a life.

Later levels see different types of balls, such as the unstable atomic balls. Trap these in a very confined space and they explode for oodles of bonus points – and in this game, points mean prizes or, more particularly, extra lives. You can also collect all the usual bonuses and powerups, which you see in all Ambrosia games, but because the essential gameplay is so different, this is a unique and utterly compulsive game. The fee is entirely fair for such a polished and professional game, which is just as well if you have to download it with a modem. At 2.8Mb when compressed, this will bump up your telephone bill. *[Well done, Derek – you went the whole review without a single smutty innuendo about balls. Oh… I just read your caption – Ed]*



3 Doors is ideal for anyone who finds mathematical probability intriguing. It explains a classic mathematical puzzle clearly and simply enough for even Derek to understand it.

3 Doors

PUZZLE

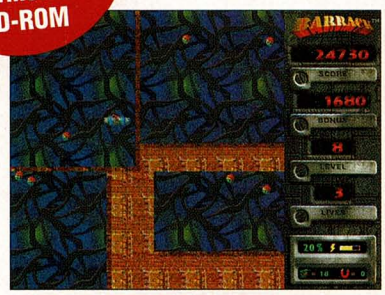
Freeware

This *HyperCard* stack presents you with three doors. Behind one is a car, and behind the other two are flat tyres. You start by clicking on a door. Behind it may be the car, or a flat tyre. Only one thing is for certain: behind one of the two remaining doors is the other flat tyre. The game now reveals a tyre behind one of the other two doors.

You now have two covered doors:

Continued on next page

All the shareware featured here and more is on our covermounted CD-ROM



In Ambrosia's new release, *Barrack*, you have to keep your balls trapped in a tight space so that they can't breed. Ooer, missus, she'll be pleased.

IFSPLM

This month's margin notes are all quotes taken from the *IFSPLM* document, reviewed on page 117.

MATTHEW PARIS, CARTOGRAPHER

'The whole island (Great Britain) should be longer, but the paper isn't large enough.'

RICH COOK

'Programming today is a race between software engineers striving to build bigger and better idiot-proof programs, and the universe trying to produce bigger and better idiots. So far, the universe is winning.'

CONFUSED ABOUT SHAREWARE?

■ **Shareware** is a form of 'try before you buy' software selling and it's a great idea so long as you're honest. When you get some shareware, the documentation file accompanying it will tell you how much it costs – typically it's somewhere between US$5 and $40 – and where to send your money. If you like the software and decide to keep it, then you're morally obliged to cough up. Not only do you get the satisfaction of boasting to friends about how honest you are, but the author will often give you something in return for registering, like a printed manual, or updates when released. The most common problem is sending money abroad, but as many shareware authors now accept credit cards, it's getting easier.

■ **Freeware** means that you don't have to pay for it at all. There are many derivations, such as postcardware, which means you have to send a pretty postcard to the author.

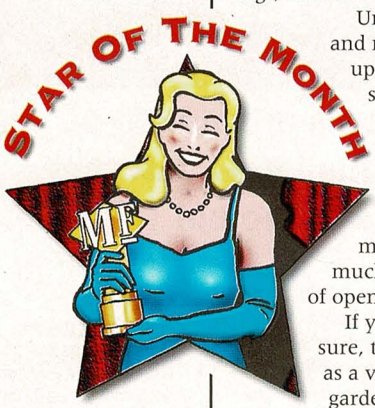
But freeware is not strictly the same as **Public Domain** (PD) because although you don't pay for freeware, the author keeps copyright and you have to follow his terms and conditions to use the program. This often means keeping all the files together and not using or selling them for profit.

MacChess 2.0

CHESS GAME

Freeware

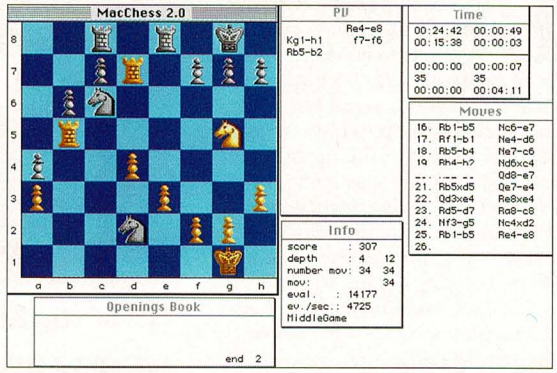
Freeware chess games have been available for the Mac for a long while. The best known is *GNU Chess*, which runs at a decent speed on a Classic and, on the more difficult settings, knocks the boxer shorts off me.



Unfortunately its opening moves are limited and rather predictable, rather like me chatting up a girl. But its end game is notably more successful than my lecherous efforts. The girls usually say they're after something more sophisticated, by which they probably mean *MacChess*. As a chess player, *MacChess 2.0* has a higher rating than *GNU Chess*, which for most people won't matter – after all, you can only be beaten so much. Of more importance is its broader range of openings, and its more flexible style of play.

If you like sensual as well as cerebral pleasure, there's a colour board and pieces, as well as a variety of styles, from traditional to avant garde. Games can be saved at any point, so you can send or upload them to a friend. A very useful feature is the ability to set the board up, placing pieces wherever you like – ideal for replaying classic games and chess problems that you see in a book.

If you fancy a nice quiet night in, *MacChess* is the ideal companion. If you want a wild night out, then my latest book, *How to Treat Birds with Respect*, is available from all good bookshops at £14.99.



When playing the highly-rated *MacChess* you can swap sides at any point in the game. Not that Derek will ever need to use that feature.

DENNIS M RITCHIE

'A language that doesn't affect the way you think about programming is not worth knowing. A language that doesn't have everything is actually easier to program in than some that do.'

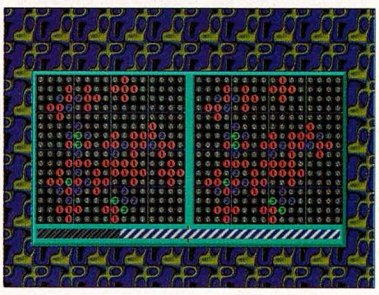
ARTHUR C CLARKE

'Any sufficiently advanced technology is indistinguishable from magic.'

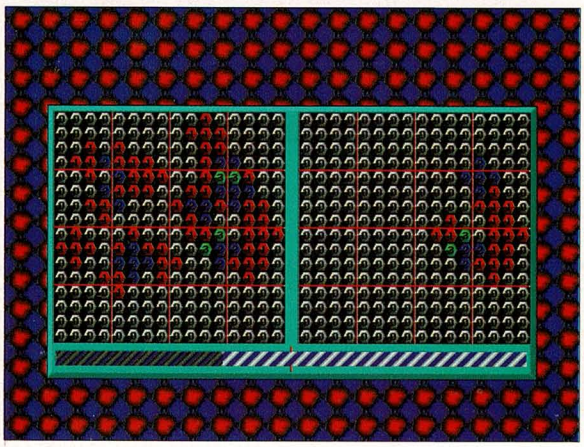
one hides the car, and the other a flat tyre. You have to make the best guess at where the car is. The choice facing you is whether to stick with your original door, or swap to the other one.

You may be the poor sort of intellectual inferior who thinks that because you have two doors, there's a 50/50 chance. Not so. There is a distinct advantage in swapping your choice. Why? Well, that would be telling – you're going to have to work it out for yourself. Hey, it only took me two and half hours, a broken pencil and a vet's bill.

This is an old mathematical problem, but I've not seen another program that explains it so well. Educational establishments should find a place for this among the other items they use to torment children.



Until you register *Add Up*, you can only play the easy level. You'll have to pay to be humiliated. Still, I'm used to that (but don't tell the wife).



Add Up Lite

GAME

Shareware £6

If you get a kick out of adding one plus one and making two, *Add Up* is your dream game. You're shown a grid, split into two (that's one plus one). On the right-hand side is a grid of noughts. On the left, in a grid of the same size, is a computer generated layout of numbers. Your mission is to recreate an exact replica of the numbers on your grid.

To do this, you click on one of the noughts (that's nought plus nought), which makes it increase by one. But so do the numbers above, below, to the left and to the right – clicking one space has four knock-on effects. You continue clicking on numbers, building them up to match the computer generated half. It takes several attempts to achieve the pattern you're aiming for (that's two plus two). It's reasonably fun in a numerical sort of way and the price is right at six (that's three plus three) pounds.

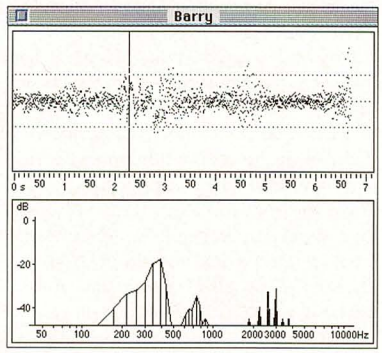
Spektrum

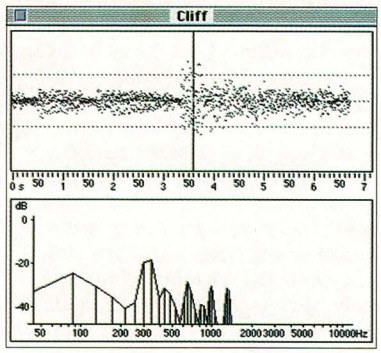
SPECTRUM ANALYSER

Shareware $5

For the technically aware, a spectrum analyser is a piece of hardware that measures acoustic power distribution along the audio frequency domain of 20 to 20,000 Hz. For the less technically aware, it's the wobbly line you see on expensive hi-fi systems, and it shows you how loud the music is.

Spektrum records a sound in the same way as you would record a sound from the Sound Control Panel, then displays the analysis. The problem is you can't see the line wobbling in real time; instead you get a black-and-white snapshot of a specific point in time. And it only works on pre-recorded sounds, so you can't have it wobble away in the background while you play audio CDs on your Mac.





It's almost impossible to compare Barry Manilow (above) to Cliff Richard (below), but with *Spektrum* you can at least have a go.

I tried it out on a Barry Manilow CD that I borrowed from Mandy, who's some kind of friend. She's always been impressed with me ever since I told her that I write the songs somewhere in the night, down at our local club, the Bermuda Triangle. *Spektrum* worked well, perhaps because even now there was only one voice to record in the old songs.

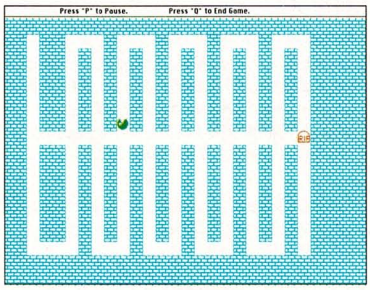
Everything went well until I tried to

Chirac Attack 3.00

MAZE GAME

Donationware

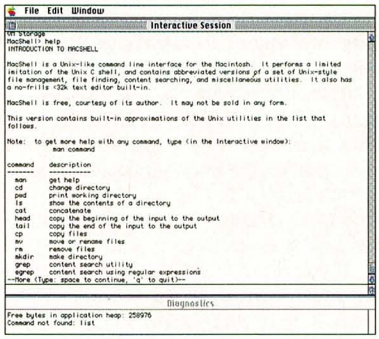
Since this game's author's shareware fee is a donation to Greenpeace, one can assume his political leanings, and, as such, he seems a bit miffed with Chirac, the French Prime Minister-cum-President, for setting off a few harmless nuclear bombs. This game is a subtle analogy of that action. You play a PacMan-like character who wanders around a two dimensional maze looking for one of eight invisible bombs. Being invisible, you can't actually see the bomb, so it's a case of wandering around aimlessly until the level suddenly ends with the message that you've found it.



Chirac is a game with a strong anti-nuclear statement. That's the only thing that's strong about it.

Death stalks you relentlessly – or at least it wanders about slowly in your general direction. An odd-looking sprite which is supposed to represent Chirac pops up every now and again to take a shot at you, but luckily not with a nuclear missile.

As a piece of political statement this has all the effect a badly scribbled misspelt placard (there are even a couple of spelling mistakes in the instructions). As a game, however, it's unutterably boring. If Greenpeace is short on funds, I hope it's not relying on this tat.



MacShell gives your Mac all the unfriendliness of a Unix machine, but with none of the speed advantages. All I can say is rm -r *.

record *Copacabana*. Just when it looked like we made it, it crashed with the error message 'Tryin' to get the feeling again'. But then some good things never last.

Blox Arcade 1.0.2

ARCADE GAME

Shareware $10

Blox Arcade is yet another *Tetris* clone to add to the pile already available as shareware. So what drives a man to re-invent the block?

Well, *Blox* is a good version of *Tetris*. You can choose between a variety of backgrounds, and various colours for the pieces, and the music is quite bearable. There's also the option to play one of several twists on the classic style of play, the best one being a split screen. Instead of blocks descending from the top of the screen, they emanate from the centre, with alternate blocks falling up as well as down.

But the most important thing with *Tetris* is the way it plays. Unlike other versions, *Blox* feels right, and it's eminently playable. If you don't have a *Tetris* game yet, you might as well start with this one.

IFSPLM 6.5

PROGRAMMING

Freeware

There are two completely different types of people who are well worth avoiding at parties. By a strange quirk of fate, you can root both types out by asking them the very same question: 'What languages do you know?'

If the reply is something like, 'If foreigners can't be bothered to learn English, I can't be bothered to learn their gibberish,' then you have found yourself a good Brit xenophobe, and you should buy them a drink. If the reply is 'Seventeen, although my Cantonese dialect is rather weak,' then fake a cardiac arrest, and get away. If the reply is 'Fortran, Pascal and C,' then you're really in trouble. But boring as computer programmers may seem, they do produce the wonderful programs you enjoy, and you should be grateful.... although not grateful enough to invite them to your parties.

This *DOCMaker* file is a comprehensive list of most Internet sites linked to Mac programming, detailing sites where you can download the languages themselves or get more information about them. The range covers everything from BASIC to Java, including kvikkalkul, a language made up purely from smiley faces :-\.

In itself this document is extremely useful to programmers. What makes it really stand out, though, is its style. Written by a Greek, Antreas Hatzipolakis, it is peppered with quotes from every nation. Many are witty and cleverly observant, while some are completely bizarre, especially the Greek ones. The strictly formal world of programming and a stream of badly translated quotes make for a lovely contrast. As Oscar Wilde once said, 'It is a very sad thing that nowadays there is so little useless information.'

MacShell 0.54b

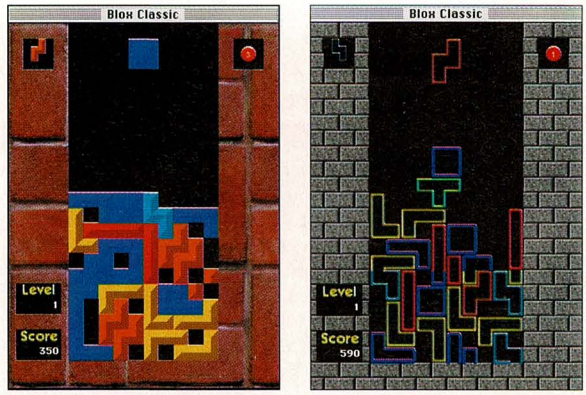
UNIX EMULATOR

Freeware

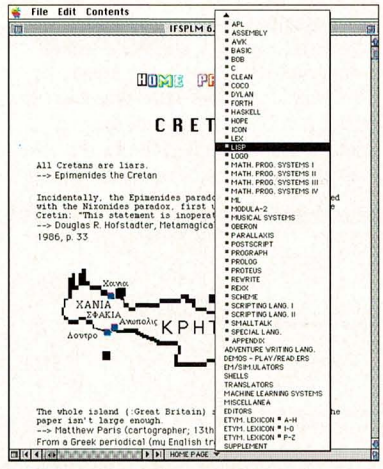
Unless you have a large network, it's unlikely you'll ever have to use a Unix machine, which is a good thing – they make using MS-DOS on a PC look fun.

So is their popularity as servers due to network administrators all being masochists? No, that's just coincidence. It's because they're incredibly powerful. But this power brings dangers and responsibilities. On a Mac, if you try to erase the startup disk, it just won't let you. A Unix machine will happily let you wipe the hard disk – especially disturbing when you realise that this is very easy to do by mistake.

MacShell gives you a Unix interface on your Mac, enabling you to type many Unix commands. There aren't many circumstances where it would be of benefit – unless you're trying to learn Unix, and want a computer to



If you like mind-bendingly frustrating games then you'll love *Blox*. If you don't, then you'll reckon there's an 'O' missing from the title.


File Edit Contents
IFSPLM 6.
All Cretans are liars.
--> Epimenides the Cretan
--> Douglas R. Hofstadter, Metamagica
1986, p. 33
The whole island (:Great Britain)
paper isn't large enough.
--> Matthew Paris (cartographer; 13th
From a Greek periodical (my English tr
HOME PAGE

IFSPLM covers all programmer's languages including LISP – which is in fact a language, and not a disability. Some programmers may disagree with this statement, however.

Continued on next page

CLARENCE DARROW

'Even if you do learn to speak correct English, whom are you going to speak it to?'

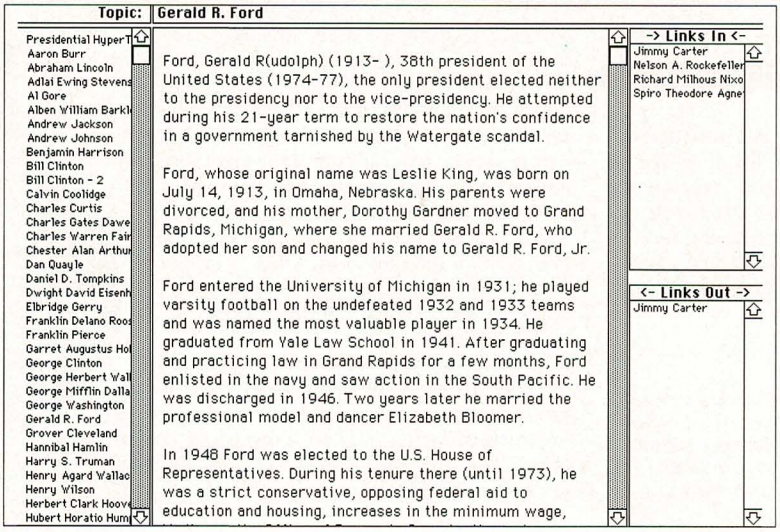
ANON

'USA is the country of freedom. Everybody can not be a president if he doesn't want it.'

DEAN ACHESON

'A memorandum is written not to inform the reader, but to protect the writer.'

Who was the only person to hold the office of US President without ever receiving a single vote? Gerald Ford. Blimey, I wonder if he would agree to lead the Labour Party.


Topic: Gerald R. Ford
Presidential HyperT
Aaron Burr
Abraham Lincoln
Adlai Ewing Stevens
Al Gore
Alben William Barkl
Andrew Jackson
Andrew Johnson
Benjamin Harrison
Bill Clinton
Bill Clinton - 2
Calvin Coolidge
Charles Curtis
Charles Gates Dawe
Charles Warren Fair
Chester Alan Arthur
Dan Quayle
Daniel D. Tompkins
Dwight David Eisenh
Elbridge Gerry
Franklin Delano Roos
Franklin Pierce
Garret Augustus Hol
George Clinton
George Herbert Wall
George Mifflin Dalla
George Washington
Gerald R. Ford
Grover Cleveland
Hannibal Hamlin
Harry S. Truman
Henry Agard Wallac
Henry Wilson
Herbert Clark Hoov
Hubert Horatio Hum
Ford, Gerald R(udolph) (1913-), 38th president of the United States (1974-77), the only president elected neither to the presidency nor to the vice-presidency. He attempted during his 21-year term to restore the nation's confidence in a government tarnished by the Watergate scandal.
Ford, whose original name was Leslie King, was born on July 14, 1913, in Omaha, Nebraska. His parents were divorced, and his mother, Dorothy Gardner moved to Grand Rapids, Michigan, where she married Gerald R. Ford, who adopted her son and changed his name to Gerald R. Ford, Jr.
Ford entered the University of Michigan in 1931; he played varsity football on the undefeated 1932 and 1933 teams and was named the most valuable player in 1934. He graduated from Yale Law School in 1941. After graduating and practicing law in Grand Rapids for a few months, Ford enlisted in the navy and saw action in the South Pacific. He was discharged in 1946. Two years later he married the professional model and dancer Elizabeth Bloomer.
In 1948 Ford was elected to the U.S. House of Representatives. During his tenure there (until 1973), he was a strict conservative, opposing federal aid to education and housing, increases in the minimum wage,
-> Links In <-
Jimmy Carter
Nelson A. Rockefeller
Richard Milhous Nixo
Spiro Theodore Agne
<- Links Out ->
Jimmy Carter

DONALD E KNUTH

'The most important thing in the programming language is the name. A language will not succeed without a good name. I have recently invented a very good name and now I am looking for a suitable language.'

SAMUEL JOHNSON

'Your manuscript is both good and original; but the part that is good is not original, and the part that is original is not good.'

ANON

'Technology is dominated by two types of people: those who understand what they do not manage, and those who manage what they do not understand.'

practise on, in which case, *MacShell* is an easy, cheap option.

Periodic Table 2.1.2

CHEMISTRY

Shareware $10

Remember chemistry lessons? I remember our teacher telling us that matter ceased to exist at absolute zero, minus 273°C. All we cared was that the lesson ceased to exist at two thirty. Maybe I would have been keener if I'd had this *HyperCard* stack to help me. It's a comprehensive list of all known elements, arranged in a periodic table format. Clicking on an element brings up details about it, such as molecular weight, discoverer, and a description.

It's straightforward enough, but the lack of a search facility is a drawback. If asked what state this program was in, I'd have to say 'unfinished'.

Icon Collector 1.1

ICON UTILITY

T-shirt ware

One of the best ways of personalising your Mac is with custom icons. The best way to create your collection is to nick them from other people – just copy the icon and paste it into the **Get Info** window of an empty folder.

This is, however, slightly cumbersome, and wasteful of disk space. If you look at the **Get Info** window of a folder it will say it takes zero disk space, but this is a lie. The icon is actually saved as a separate file inside the folder, and because it's invisible you can't see how much space it takes up.

Icon Collector comes to the rescue, offering a convenient way of storing all your icons in one file. To store an icon, you drag the file, folder, application or whatever, onto *Icon Collector's* open window. To retrieve an icon, just drag it from the window onto the Desktop.

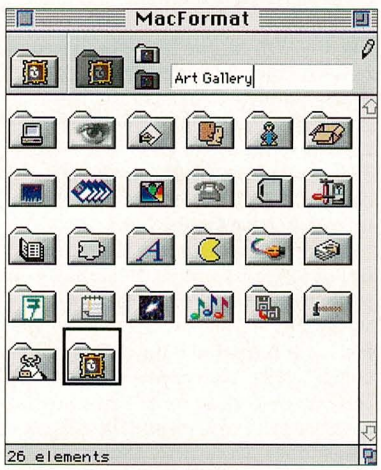
This utility is perfect in execution, and only costs a T-shirt. If you like icons, get this program.

Clinton Countdown 2.2.0

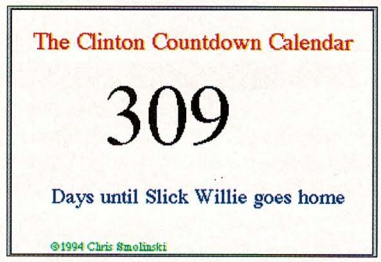
STARTUP UTILITY

Voteware

With Presidential elections in the offing, US citizens are well into political fever. *Clinton Countdown* features a digital voice that tells you how many days it is until Slick Willie goes home – Slick Willie being Bill Clinton's nickname, and going home being a reference to him being elected out of office. Yes, this is true right-wing software that anticipates a Republican win at the next election.



'Collect all the icons you can. You never know when you're going to need one.' (Derek's mum.)



Clinton Countdown tells you exactly how many days are left until the US elections. A British version would have to say 'Probably about 300 days, although it will largely depend on public optimism and the tides…'

The author suggests you put this program in your Startup Items folder. But the election isn't until the end of the year and, even if unelected, Bill won't leave office for a couple of months – and by then this program will *really* be getting on your nerves.

If you don't feel like waiting to see what happens in January, you can trick it by setting your Mac's internal clock forward. Unfortunately the author hasn't thought that far ahead, and it all goes horribly wrong. Much like politics really. As a fee, the author suggests that you vote Republican.

Presidential HTB 4

HYPERCARD STACK

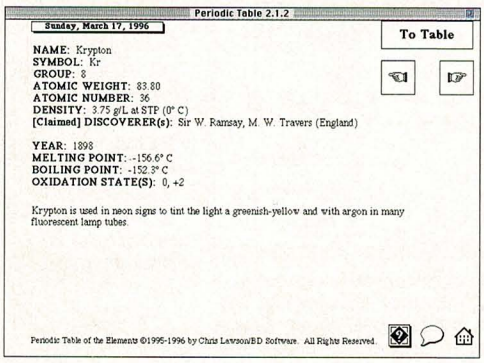
Shareware $19

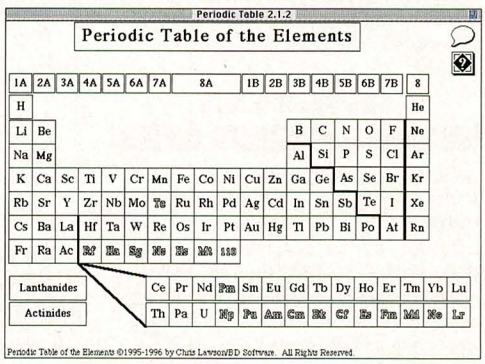
If truth is the first casualty of war, then electioneering deals a death blow to dignity. In the battle against US negative advertising *HyperCard* delivers this A-Z stack. It is a detailed glossary of most US presidents and vice presidents, from Aaron Burr to Zachary Taylor. It lists their major achievements in office, and offers plenty of background information, such as their childhood traumas, college life, and whether they inhaled or not.

There are the usual hyperlinks, which enable you to hop through the presidents' sordid lives. Bill Clinton facts are so abundant that he's the only person to have two entries, and it does perhaps point towards a slight Democrat bias. Of more significance is the absence of George Bush. Okay, so he lacked the dynamism of Margaret Thatcher, and indeed her dress sense, but to leave him out altogether is like leaving Lionel Blair out of *The Definitive History of Television*.

As a free reference work it might be of value to you if you're interested in the forthcoming US elections, but at $19 it can't compete against a good thick book. Maybe the authors should have invested in some negative advertising against paper. **MF**

The *Periodic Tables* stack is reasonably comprehensive, although the entry on Krypton totally fails to mention Superman.


Periodic Table 2.1.2
Sunday, March 17, 1996
To Table
NAME: Krypton
SYMBOL: Kr
GROUP: 8
ATOMIC WEIGHT: 83.80
ATOMIC NUMBER: 36
DENSITY: 3.75 g/L at STP (0° C)
[Claimed] DISCOVERER(s): Sir W. Ramsay, M. W. Travers (England)
YEAR: 1898
MELTING POINT: -156.6° C
BOILING POINT: -152.3° C
OXIDATION STATE(S): 0, +2
Krypton is used in neon signs to tint the light a greenish-yellow and with argon in many fluorescent lamp tubes.
Periodic Table of the Elements ©1995-1996 by Chris Lawson/BD Software. All Rights Reserved.


Periodic Table 2.1.2
Periodic Table of the Elements
Lanthanides
Actinides
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Mr Mac says "For a Happy Mac call Sidwell Technology"

Apple Authorised Reseller

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7200/75 8/500	£859
7200/90 8/500 CD	£1109
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8500/120 16/2000 CD	£3025
9500/132 16/2000 CD ATI Card	£3549
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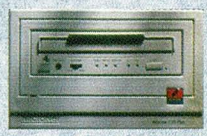

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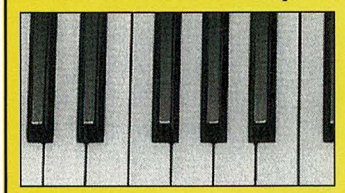

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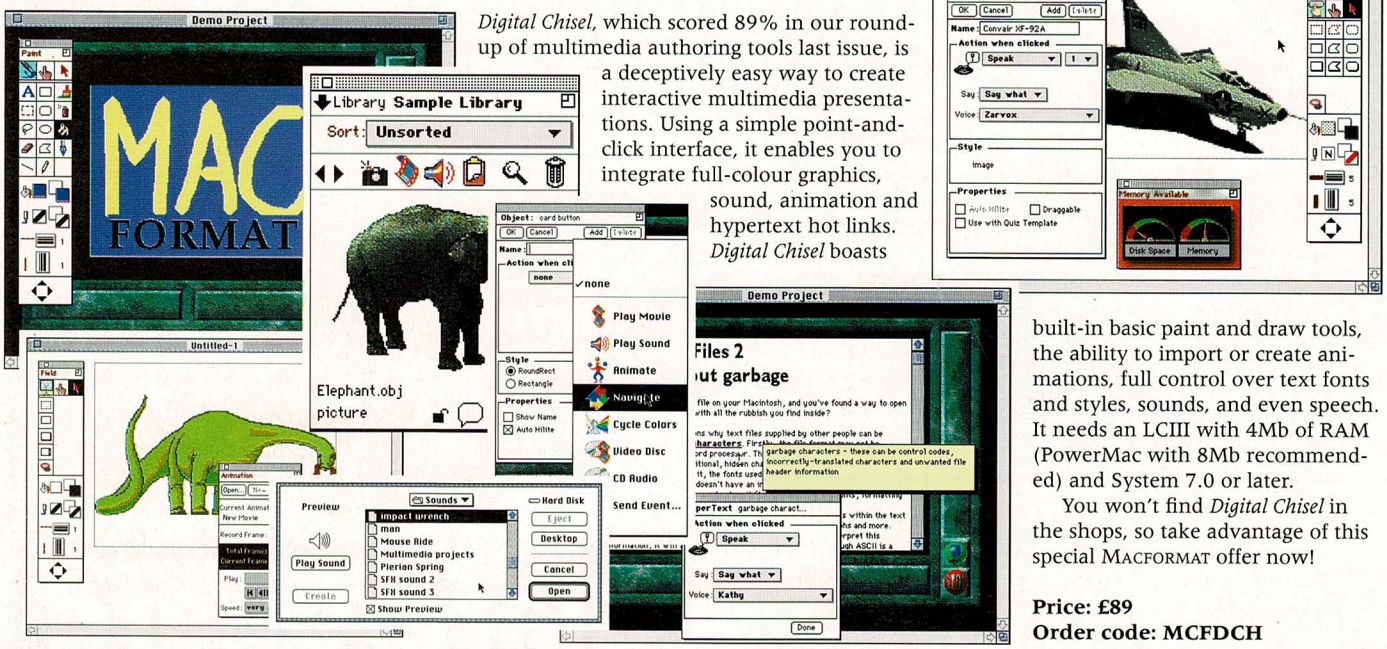
Digital Chisel 2.0



Digital Chisel, which scored 89% in our round-up of multimedia authoring tools last issue, is a deceptively easy way to create interactive multimedia presentations. Using a simple point-and-click interface, it enables you to integrate full-colour graphics, sound, animation and hypertext hot links. *Digital Chisel* boasts built-in basic paint and draw tools, the ability to import or create animations, full control over text fonts and styles, sounds, and even speech. It needs an LCIII with 4Mb of RAM (PowerMac with 8Mb recommended) and System 7.0 or later.

You won't find *Digital Chisel* in the shops, so take advantage of this special MACFORMAT offer now!

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Version 3.0.4

The latest version – exclusive

We gave away *Color It! 2.3.5* on MACFORMAT 31's Cover CD-ROM and Disk (if you missed it, see the opposite page to order a copy). Now we bring you the exclusive chance to buy the NEW *Color It! 3.0.4*, to give you image editing features on a par with those of the mighty industry standard, *Photoshop*. This latest version of *Color It!* offers new, powerful features, including:

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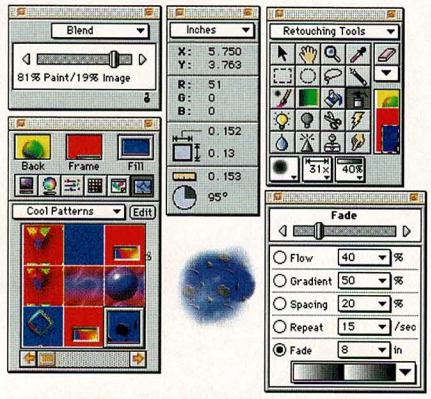

If *Photoshop* is beyond your budget, then the latest version of *Color It!* is a serious alternative.

- Crop tool
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Color It! version 3.0.2 rated a storming 88% in MACFORMAT 28. So don't miss out on this opportunity. This up-to-date version is available nowhere else in the UK, and *Color It! 3.0.4* is available from MACFORMAT for a limited period only. It can be yours for only £49.95, inclusive of delivery and VAT.

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ISSUE 25

June 1995

■ **On the disk:** *Knot 1; MacSnails; Glypha 3, TypeIt4Me, Electric Poet* and MIDI files.

■ **On the CD-ROM:** sorry, the CD-ROM edition is no longer available.

■ **Inside:** all you need to know about PowerMacs, fax-modems tested; plus some 'Cosmic' CD-ROMs.

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ISSUE 26

July 1995

■ **On the disk:** animation programs, *Disinfectant 3.6, Telefinder* and *Digital Arts.*

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■ **Inside:** animation on the Mac; 15- and 17-inch monitors reviewed; comms made easy with *TeleFinder* and DIY multimedia.

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August 1995

■ **On the disk:** *Anagrams, Word Breaker, Smart Calendar, Xearth* and *BattleTanks.*

■ **On the CD-ROM:** sorry, the CD-ROM edition is no longer available.

■ **Inside:** the complete guide to portable Macs; Internet basics series; plus portable printers reviewed.

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ISSUE 28

September 1995

■ **On the disk:** *Catch The Buzz, Lobster, DragThing.*

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■ **Inside:** image editing; what those Extensions and Control Panels *do*, graphics tablets, PaperPort scanner and *Dark Forces* reviewed.

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ISSUE 29

October 1995

■ **On the disk:** clip art, games and utilities, fonts.

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■ **Inside:** eye-catching black-and-white DTP; clip art collections, *KPT Vector Effects,* language learning software and multimedia encyclopaedias reviewed.

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ISSUE 30

November 1995

■ **On the disk:** *MacPipes, MacQubic, Gossamer* and *Do It All!* personal organiser.

■ **On the CD-ROM:** sorry, the CD-ROM edition is no longer available.

■ **Inside:** publishing on the Net and CD-ROM, QuickTime utilities, *Alone in the Dark, SmartSketch,* input devices – alternatives to the mouse.

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ISSUE 31

December 1995
Double-disc special!

■ **On two disks:** *Color It! 2.3.5* – full version, *Factory.*

■ **On two CD-ROMs:** sorry, the CD-ROM edition is no longer available.

■ **Inside:** 50 ways to make your Mac run faster, *ClarisWorks 4, Doom 2, SoftWindows,* personal organisers, programming.

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ISSUE 32

Christmas 1995

■ **On the disk:** *Pentominoes, Frog Xing, Xmas Lights, FindText 1.3,* utilities.

■ **On the CD-ROM:** sorry, the CD-ROM edition is no longer available.

■ **Inside:** create great art on your Mac, the new range of PowerMacs, *PageMaker 6,* kids' multimedia, *Wing Commander 3.*

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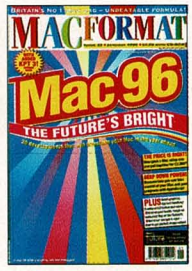

ISSUE 33

January 1996

■ **On the disk:** *Eclipse 3, Altair 2, Gravity Balls 1, TextBrowser 1.1, Aaron.*

■ **On the CD-ROM:** *Doom, Descent, Voodoo Lounge,* education demos and more.

■ **Inside:** what's happening on the Mac in 1996, *KPT 3, Day of the Tentacle, Aladdin, Session 2,* guide to buying a Mac setup.

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ISSUE 34

February 1996

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■ **Inside:** new 3D graphics technology and software; storage systems; kids' multimedia; *ClarisImpact 2; Doom 2* tips; handling text files.

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ISSUE 35

March 1996

■ **On the disk:** *Smoothie, Shatterball, NoteBook Maker, Diagonal* and *BeerStack.*

■ **On the CD-ROM:** *Fractal Design Painter 4, Klik & Play, Code Warrior Lite* complete.

■ **Inside:** Mac advice, service & backup assessed; Natural Media; *PageMill;* handling foreign file formats; *Marathon 2;* gamebusters.

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ISSUE 36

April 1996
Double-disc special!

■ **On two disks:** multimedia suite, including *ProView.*

■ **On two CD-ROMs:** *Apple Media Tool* plus demos of 8 authoring packages, *F/A-18 2.0, HoTMetaL 2, 3d-Active.*

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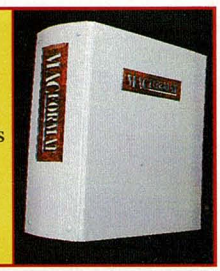

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Angel Devoid

On the outside you're the world's most wanted man. On the inside you're the lawman sent to pursue him. In the future, even your face can be stolen.

However hideous or shocking you might find your own face, imagine waking up, looking in the mirror and seeing someone else staring back at you. Imagine then that it's the face of the world's most hated, most vigorously pursued criminal.

That's what's happened to your character, Jake Hard of the Paradise City Police Department, hero of this futuristic, cinematic adventure game. After giving pursuit to a speeding hover-car driver, you are blasted out of the sky, and left badly injured and unrecognisable in the wreck of your car. Just before blacking out, you see Angel Devoid – international terrorist and the man who's just shot you out of the sky – swap over your identification information. The next thing you are aware of is being in hospital with a reconstructed face. The face of Angel Devoid.

Take the hover taxi between discs two and three but don't shoot the driver. Or is that too obvious?

Paradise City is full of people itching to liquidate the man you appear to be, from cops to gang members. In fact, only the face of Michael Portillo could make you more feared and hated, so you have to get moving. Your first priority is to stay alive; your second, to find out what the real Angel Devoid is up to, and why he's so keen to have you take a bullet for him. Once you've escaped from the hospital you're on your own, with just your PDA (personal digital assistant) computer and the mean streets for company.

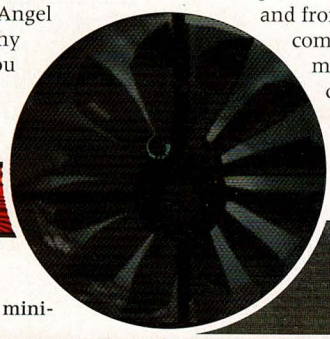
The mayor gets it in the head. Mmmmmm. *Angel Devoid* is definitely not a game for all the family.

Angel Devoid is the latest in a developing line of point and click graphical adventures. This type of game attempts to maximise realism and depth without compromising interactivity and gameplay. Since *Myst*, there has been a steady move from flat picture-book-style scenarios to rendered 3D, and from text-based in-game communication and rudimentary sound effects to quality recorded speech and sampled sounds.

Games like *Buried in Time* (which scored 89% in MACFORMAT 31) combine QuickTime movies with computer-generated game scenarios to great effect. *Angel Devoid* takes this concept to a new level of technical excellence.

Problems, problems...

Using a video compression system known as True Motion, sequences are created from live action video, augmented by computer graphics programs. This technique is relatively new to the world of Macintosh gaming and, because video compression requires vast amounts of storage space, games using a lot of it suffer in two ways. First, they tend to be too short, providing poor value for money. Second,



Wonder what happens if you touch this...

Whoops!

Good job you always carry a spare.

And no game would be complete without the obligatory comedy vicar.

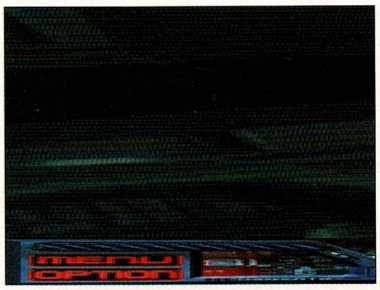
IN A BODY BAG

Such is the reputation of Angel Devoid that most of his enemies (and there are a lot of them) take the shooting-to-kill option with minimal delay. The feeling that everyone is out to get you heightens the sense of claustrophobic paranoia that the rest of the game – its sound, storyline and graphics – induces.

There are, however, some elements that cause only sub-lethal damage. At the bottom right of the control interface are three energy bars. Each non-lethal hit you suffer will knock one of these out: lose all three and it's on with the body bag. Take the underground ventilation fan for instance...

'Come fly with me, come fly away.' Warning: Frank Sinartra is *not* included with this game. Probably a good thing.

He may look cuddly, but this man is nasty and should be shot with all haste.



If you like wandering around in the dark, *Angel Devoid* is definitely the game for you.

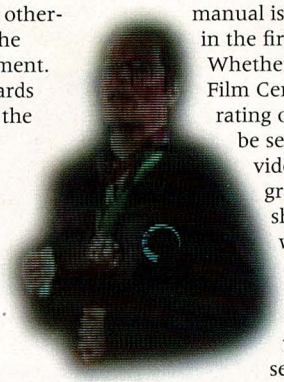
their poor design often means you find yourself trapped in a multiple choice marathon with all the gameplay of custard. Not that you can't have a lot of fun with custard...

But video is the future of adventure games, and *Angel Devoid* is an excellent example of what happens when the developer gets the format right. Set in an oppressive, futuristic city, on a planet devastated by ecological disaster, the game has an overbearing air of gloomy danger – the adventure game equivalent of *Blade Runner*. With fine performances from its human actors, spread over four compact discs, *Angel Devoid* is better than the sum of its parts initially suggests.

The game adopts a traditional adventure format – you collect items and solve straightforward puzzles to open up further areas of the game, until you eventually save the world. Many full-motion video games have failed because of the linear nature of their design, and, although this is true of *Angel Devoid* to a certain extent (there would be no point in the puzzles otherwise), it never gives you the feeling of restricted movement. You can always go backwards or sidetrack, and many of the puzzles can be solved in several different orders.

The game also offers a Save facility, which is very useful in this type of scenario. The majority of the gameplay relies on your solid, logical interpretation of the facts as you know them, but it would be an exaggeration to suggest that the 'guess, point, click, hope...' technique of your typical True Motion game has been eliminated. In some situations, especially when you talk to some of the video characters, the correct answers seem to become random. If you don't save your game position regularly – and sometimes even if you do – some of these exchanges become frustrating. Similarly, while the graphics and animation in the game are, in places, jaw-droppingly beautiful, they soon pall as you traipse from scene to scene, unsure of what to do next.

That said, *Angel Devoid* is an original and compelling game. Even the game manual is written imaginatively – in the first person 'by' Jake Hard. Whether the British Board of Film Censors decides to stamp a rating on the game remains to be seen, but some of the video footage contains fairly graphic violence, and, if shown at the cinema, would probably rate a 15 certificate. The adventure as a whole possesses an unsettling, almost threatening, air and the selection of endings is genuinely surprising – forming the final pieces of a well-constructed, all-inclusive plot.



The mayor with his head intact. Looks better like that, eh?

Angel Devoid doesn't quite manage to solve all the problems of this format, but it is the most successful attempt at this genre yet to be seen on the Mac, and with these cautions in mind, it comes highly recommended. **JAMES ASHTON**

And this is your ultimate objective. We won't spoil the ending by telling you what to do.

ANGEL DEVOID

Price: £39.99. **Out:** now.
Requires: Quadra or better, 8Mb of free RAM, System 7 or later, 13-inch monitor (thousands of colours recommended), double-speed CD-ROM drive.
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GRAPHICS 94%
A fantastic achievement. A full-screen integration of computer generated scenery and realistic video footage. Superb.

SOUND 85%
Perfect speech synchronisation. Atmospheric sound effects and background music add to the paranoia inducing game.

GAMEPLAY 76%
Limited by its format. Backtracking becomes essential and it's a slow process. Not easy by any means.

MACFORMAT RATING 84%

ANYONE FOR ETHICS?

In Angel's world, major injuries can be repaired using body clones. These are grown from scratch, the necessary spare parts removed – an eye, for instance – and the rest destroyed.

HUGE

Angel Devoid comes on four separate CDs, and represents over 2Gb of programming. Not bad for 40 quid?

Full Throttle

Rev up your chopper. There's a demo of *Full Throttle* on the Cover Disk

As the only person on MACFORMAT with a bike licence, Jillian Werb was the obvious choice to review this tale of gratuitous violence and big choppers.

ROCK 'N' ROLL

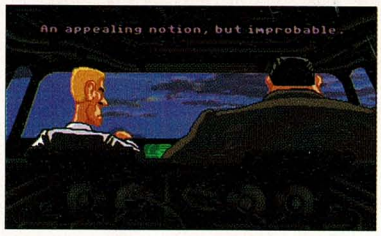
The soundtrack to *Full Throttle* is by the Gone Jackals, and is available on their album *Bone to Pick*, available on Blue/Black Records. And it's surprisingly good.

Ben wasn't having a good day. He'd woken in a dumpster and punched his way out, only to be confronted by events that were rapidly going from bad to worse. His motorbike disintegrated while travelling at extreme speed along the highway, and now he was watching the news only to see a manic newscaster announcing that Ben had murdered his friend, Malcolm Corley, head of Corley Motors. He knew he hadn't done it, but who would believe him? No one, that was who – until he found the photos of Corley's assistant, Ripburger, committing the foul deed. Things were not looking good.

Ben was the gravel-voiced and strong-of-jaw hero of *Full Throttle*, an adventure game following hot on the heels of the award-winning *Day of the Tentacle*. This was no tale of cutesy characters and infuriating puzzles, though. With characters like Ben himself, Maureen (a strong-minded anti-bimbo), Father Torque, the Cavefish, and other memorable characters, *Full Throttle* was not so much an interactive movie as an interactive cartoon adventure movie™. Ben was spending more of his time appearing in cut scenes than he was actually solving puzzles.

But you wouldn't catch Ben in just any old game. *Full Throttle* set the standards for other interactive cartoon movies to aspire to – stylish and memorable. The unsavoury characters he encountered were bizarre and perfectly realised. The scenery was impeccably drawn – the hazy sunsets in an Arizona desert a particular favourite. And the soundtrack suited him down to the ground – a thumping backbeat appearing from nowhere every time he straddled his chopper and roared off into the sunset (and you could be sure Ben wasn't going to walk anywhere). You could cut the atmosphere with a flick-knife, and that was exactly what he intended to do.

Full Throttle's underplayed humour. This is Ben's comment shortly before his motorbike falls apart at high speed on the highway...



In case you hadn't guessed, these guys are not the goodies of the game. They're bad to the core.

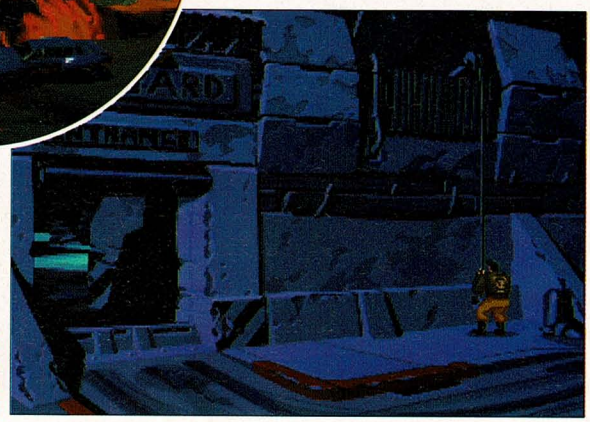
Waking up in the bottom of a dumpster. Just another day for Ben in *Full Throttle*.

The cut scenes in which Ben found himself starring, although long, were a joy to watch, if he said so himself. And, rather than offering the belly laughs of *DOTT*, in this story humour was offered carefully – just the occasional wisecrack to relieve the tension. As the barman pointed out to Ben, the customer with the knife is *always* right.

But while the cut scenes were wonderful, Ben found himself getting slightly bored and feeling just a little peeved with the lack of puzzling that was going on. After half an hour or so he was starting to feel that the puzzles were merely there to keep him busy before he got to star in the next few cut scenes. And – heck – he was more intelligent than this. These puzzles were nowhere near as convoluted, brain-stretching, or off-the-wall as he'd been led to expect. Although a few of them had him kicking himself in frustration when he realised that he'd been missing the obvious, with most he merely needed to spend time

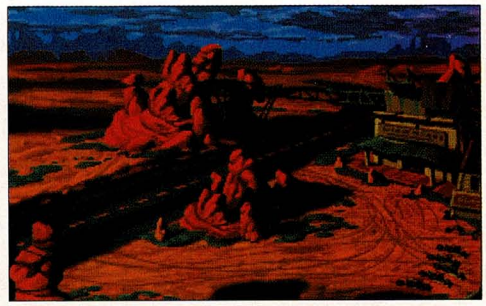
Uncle Pete's Mink Ranch – Maureen's hideaway when things get rough. Just look at that scenery. Gorgeous.

One of the few really good puzzles in the game. The tower is full of gas. You need gas for your bike. The answer's not as obvious as it seems.



Another mind-bender. How do you get Ben through the door while holding onto the chain?

'Please use the bridge for all your trans-gorge travel.' The trucker gets it, courtesy of the Cavefish...



The backdrops are salivatingly gorgeously drawn. Imagine a gentle guitar twanging in the background.

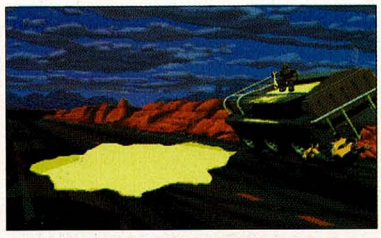
The Cavefish – possibly the only gang of blind bikers in existence.

searching the often-dark screens, pointing and clicking absolutely everywhere to make sure he hadn't missed anything. All too often, the vital element of the puzzle was hidden off in a corner, and the frustration was, to be honest, not always worth the pleasure he was getting from solving them. He was no intellectual, granted, but...

So he was a little relieved when he got the chance to roar down the Mine Road and indulge in a little real violence. This was more like a real arcade game. But – hold on – he was having to use his brain again. It was no use just belting his opponents over the head as fast as possible until they lost it on the slippery road. He was having to think about which weapon to use... having to slide in there carefully, and avoid obstacles. He started to lose his patience and get a little annoyed with the whole exercise – it was time to get on with what was left of the game, and solve this plot once and for all.

The interface was suiting him nicely, though – he was impressed with what those LucasArts guys had achieved. Clear screens with no annoying icons to clutter the place up – and when he wanted to look at things, talk to other characters or use whatever he happened to be holding, a simple point and click did the job. This was how adventures should be. Convenient.

And then, all of a sudden, it was over. He'd expected a long and fulfiling adventure, but it all finished just a little too suddenly. Granted, it was the Hollywood ending he'd been led to expect, but the whole experience was, although beautiful, frankly kinda short. He might've had a bad day all round, but at the end of it he found himself itching for more. **MF**



A nasty accident just waiting to happen. Maybe you could just, you know, *encourage* it to happen. To someone else, that is. Heh heh heh.

FULL THROTTLE

Price: £44.99. **Out:** now.
Requires: Quadra or better, 8Mb of RAM, System 7.1 or later, 256-colour, 13-inch monitor, double-speed CD-ROM drive.
Contact: Virgin on 0171 368 2255 or you can find LucasArts' Web site at:
http://www.lucasarts.com

GRAPHICS 95%
Absolutely gorgeous. This is exactly how games should look.

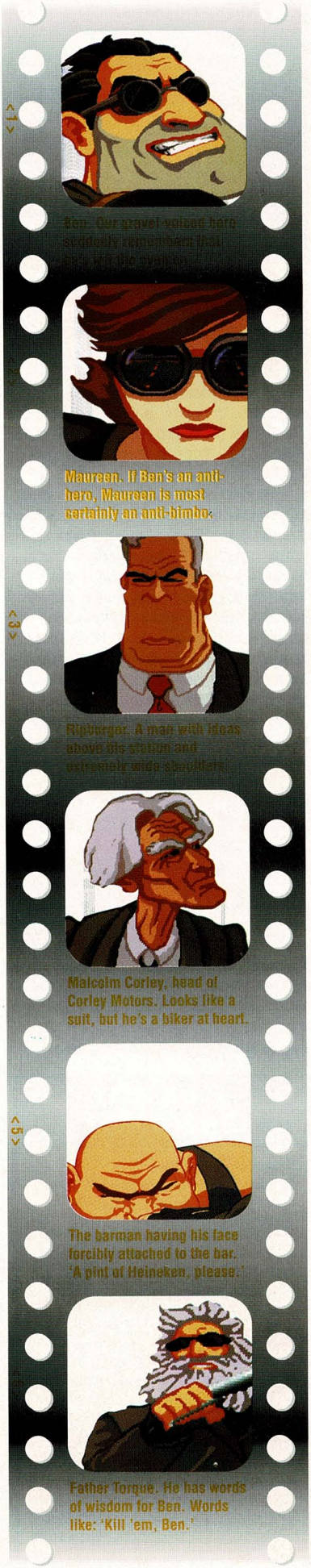
SOUND 95%
Husky voices, pounding, atmospheric soundtrack, occasional effects.

GAMEPLAY 80%
Lets the side down. Puzzles aren't as challenging or convoluted as you'd expect, and it's just too short.

MACFORMAT RATING 85%

TENTACLES ABOUND

Day of the Tentacle, also by LucasArts, was reviewed in MACFORMAT 33, where it scored a Classic award winning 94%. If you missed it, see page 121 for details of how to get your hands on a copy.


<1>
Ben. Our gravel-voiced hero suddenly remembers that he's in the middle of...
<2>
Maureen. If Ben's an anti-hero, Maureen is most certainly an anti-bimbo.
<3>
Rigburger. A man with ideas above his station and extremely wide shoulders.
<4>
Malcolm Corley, head of Corley Motors. Looks like a suit, but he's a biker at heart.
<5>
The barman having his face forcibly attached to the bar. 'A pint of Heineken, please.'
Father Torque. He has words of wisdom for Ben. Words like: 'Kill 'em, Ben.'

Allied General

An exciting, accessible war game for the Mac? Not possible, surely? Here's your chance to take control of the Allied forces in WWII, in SSI's latest war game.

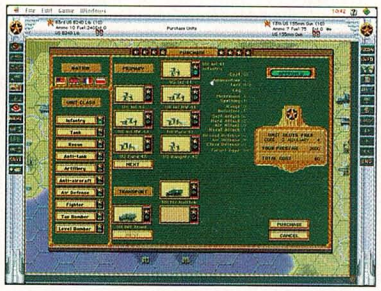
As far as reputations go, SSI is to war-gaming what Pavarotti is to popular opera, and its latest hex offering, *Allied General*, has a seductive charm that's unmatched by practically any other strategy game around. It's a game that both novice strategists and veteran armchair generals can get addicted to. It doesn't do anything particularly fancy, but it strikes just the right balance between hard-core strategy and fun gameplay.

In *Allied General*, you're placed in command of the British, American and Russian troops in Europe during the Second World War. Consequently, there are three campaigns to choose from – North Africa, Western Europe and Russia – each of which features several smaller scenarios based on historic battles. For example, you can choose to invade the Normandy beaches on D-Day or to marshal the Desert Rats across North Africa. You'll have to use real-life strategies and tactics if you want to dent the Axis occupation; masterminding invasions, fighting naval engagements and battling for control of the skies.

Take the Allied invasion of Sicily, which was a stepping stone towards the eventual offensive on the Italian mainland. Here you can use fighters for reconnaissance, and bombers to soften up the German ground targets. Using a fleet of landing craft, you can land your ground units, ably supported by the long-range guns of battleships and destroyers. AA batteries help protect your fragile beachhead from enemy aircraft and mobile artillery pound enemy towns, while your soldiers, tanks and APCs advance to clash on the battlefield.

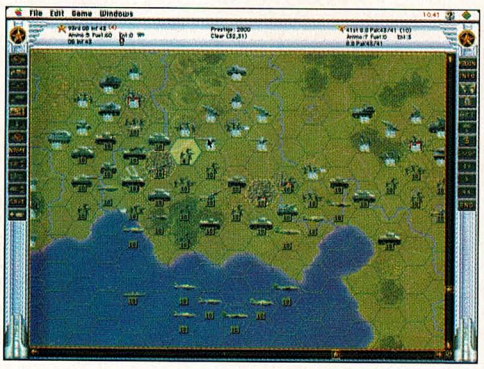
All the scenarios in the game are challenging and neatly constructed, and *Allied General's* strength is that you can easily fight complicated battles without getting bogged down in an avalanche of stats and number crunching. In fact, such is the game's flexibility that you can choose a quick, wham-bam engagement that lasts ten turns, or go for a full-blown campaign where, with a few tanks, cannons and soldiers, you can replay history and guide the Allied forces into the heart of 'Fortress Europe'.

What makes these campaigns more challenging than the one-off battles is that you start off with a specified number of units and you take these core units with you from scenario to scenario.



Capturing and holding cities earns you 'prestige' points. You can keep these and later trade them for new units and replacements. Use them wisely.

In contrast to the maps, stats and number-crunching, *Allied General* uses striking watercolour-style graphics.



The real trick to playing *Allied General* is being able to co-ordinate land, sea and air forces without getting confused.

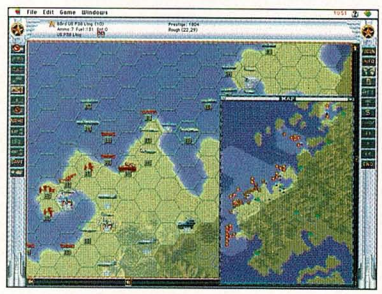
In the North African campaign, you have a poor collection of units to rout the Italian occupation with.

Atmospheric black and white FMV footage helps to enhance the historical realism of the game.

This means the more units you lose in battle A, the less you'll have to work with in battle B, and so on. Meanwhile, capturing and holding key cities, as well as securing overwhelming victories on the battlefield, earns you 'prestige' points that you can use to purchase extra units and replacements. Your military resources are limited, so use them wisely.

It doesn't look any better than most other hex-based war games, but *Allied General* is totally absorbing. Black and white newsreel footage adds to the atmosphere and the game is fully customisable: you can play a two-player game, adjust the difficulty level, resupply units automatically, even play against a friend. It might not be the kind of game you tend to get excited about, but *Allied General* is a comprehensive and excellent war game. Dare we say it, it's one of the best you can play on the Mac.

DEAN EVANS



The Jupiter scenario simulates Churchill's planned invasion of Norway. It was never attempted.

MORE WAR

Look out for the sequel to *Allied General*, which is coming to the Mac this Spring. It's called *Panzer General*.

ALLIED GENERAL

Price: £44.99. **Out:** now.
Requires: Quadra or better, 8Mb of RAM, System 7 or later, 13-inch, 256-colour monitor, double-speed CD-ROM drive.
Contact: Mindscape on 01444 246333.

GRAPHICS 89%
Neat, colourful, and it makes good use of old newsreel footage.

SOUND 75%
Simple booms, crashes and rat-tat-tats. Nothing spectacular, but then this *is* a strategy game...

GAMEPLAY 92%
With three campaigns and over 35 scenarios, *Allied General* could keep you amused for years.

MACFORMAT RATING 85%

AmoebArena

They're not plants. They're not animals. They can't even iron your shirts. But the fate of the Universe is in their pseudopedal extensions in this tricky strategy game...

Rather than wasting millions of human lives fighting for control of Europe, Asia and Africa, the World War II leaders should have gone down to their local pond and scooped up a few jars full of amoebic lifeforms. Then, after carefully constructing a microscopic playing board, they could have competed for territory using their strategic wit rather than guns, tanks, battle cruisers and the time-warped tittle-tattle of *Goodnight Sweetheart's* Gary Sparrow.

This far fetched scenario serves as the premise of *AmoebArena*. Of course, it's set in the future and comes with a complement of oddball alien warlords, but essentially the idea is to win territory using protozoan troops as cannon fodder. It's a turn-based game for up to four players, though if you play alone your Mac can control the other three.

Each player gets a certain number of amoebas and may place them in designated sectors of the board before play begins. The number of amoebas and where you can place them depends directly upon what kind of challenge you've elected to compete in – and there's quite a choice. You can play a single game on a free-form board, or opt for a tournament where the entire star system is up for grabs. Or, you could accept Neurotron's Challenge, playing on specially designed boards where the number of amoebas you get and the squares you can put them on vary from game to game. If you crave still more variety, there's also a Scenario Editor that enables you to set up the game in almost any way you want.

To make matters more interesting, there are four types of protist – or bug – to place on the board, each with specific abilities. One spits poison, converting its victims into members of its own team. Another acts as a blocker-crusher. Yet another has the ability to slap any and all enemies with its pseudopods, while the last sort bites.

Once your amoebas are in place, you can start battling the enemies. It's a fight to the death – last one standing wins the territory that's up for grabs (blockers notwithstanding). Basically, when your turn comes around you're allowed to move three amoebas or attack enemy amoebas with your own amoebas' offensive capabilities.

Every so often one of your amoebas will reach the point where it can either reproduce, or regenerate some of its health or attacking characteristics.

Here's Count Webster going head-to-head in the Neurotron's Challenge. All of Zeta Sector is at stake.

For a game of this type, *AmoebArena* has plenty of variety. Nevertheless, it is a limited experience. The game is infused with wacky American humour which you might find funny at first, but which gets tedious after three or four turns. It's also quite an easy game to play against your Mac, once you figure out what you're supposed to be doing. Despite Apple's best intentions to make the Mac more human, and C&G's to make *AmoebArena* intelligent, the computer controlled players fall into a predictable approach.

Playing against people, however, livens things up considerably. Friends playing the game are likely to make silly mistakes because of the usual distractions (being punched and kicked by the other players), but are also more likely to apply more surprising strategies. The only problem is, if you do persuade more advanced lifeforms to play *AmoebArena* with you, you all have to squash around one monitor – there's no network or modem setup included. And after a while, despite the maker's attempts to add humour and personality via the alien warlords, the game doesn't stay gripping or pacy enough to make you care whether you win or lose.

GARRICK WEBSTER

AMOEBARENA

Price: £39.99. **Out:** now.
Requires: LC or better, 5Mb of RAM (8Mb recommended), System 7 or later.
Contact: Softline on 0181 401 1234.

GRAPHICS 79%
Colourful animations, but mostly of the static variety.

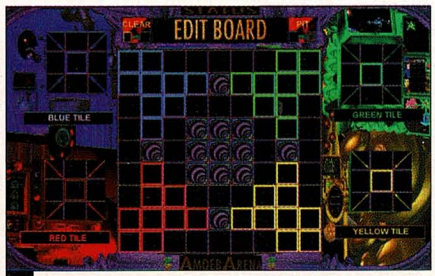
SOUND 65%
Hey, we're wacky again today.

GAMEPLAY 70%
Strategic, but not too tough.

MACFORMAT RATING 70%

PLANNING PROTIST WARS

1 Using *AmoebArena's* Scenario Editor you can plan your own battle boards. First you designate how many amoebas each player receives.

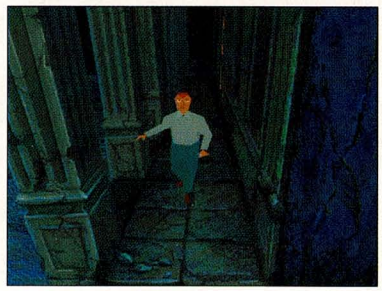


2 Then you design the board, plotting where players may place their warriors and also placing pit traps wherever you please. The pits are the purple things.

3 Then you're ready to play. The game begins with each player laying out their party of protists on the allocated squares. Let the battle for the Universe begin.

Alone in the Dark 3

A Wild West, gold-rush adventure game sequel, with *Doom*-like character movement and dodgy trousers as far as the eye can see. It has to be good... doesn't it?



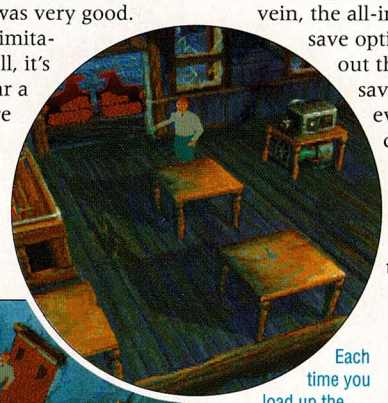
The game engine works smoothly enough, scaling your character perfectly into and out of the scenery. It's still bloody boring to play, mind.

POWER HUNGRY

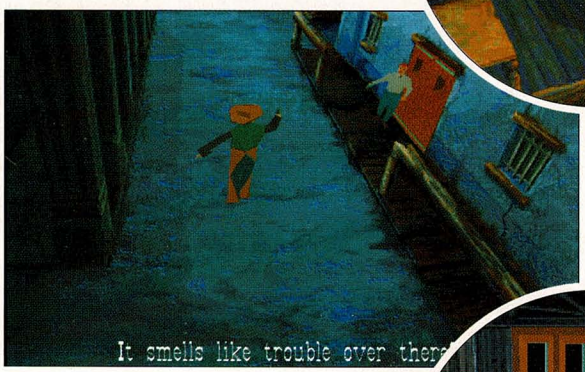
Although *Alone in the Dark 3* will run on humble Macs, the game screen is very much reduced in size, making play that much harder. You'll need a Quadra or better to run the game comfortably at full-screen.

Care must be exercised with sequels. Maximum care must be exercised with the third, fourth or fifth in a series. *The Godfather* and *Star Wars* were both proof that sequels themselves are not evil incarnate – but then, they were planned as trilogies. If you need a cinematic equivalent to *Alone in the Dark 3*, then *Jaws* and *Rocky* should spring to mind.

Yes, the original was very good. The second, a good imitation. The third... well, it's all beginning to wear a bit thin now. You are still Edward Carnaby, you are still a supernatural private eye and you are *still* wandering around a semi-3D adventure game world, which has polygon edges that could cut marble. What's changed? Well, this time you're in the Wild West™, or, more precisely (and with an eye to anachronism), a deserted town founded at the time of the gold rush. It's full of ghosts. It's full of guns. It's full of those stupid trousers only cowboys wear. The only thing it's not full of is fun.



Each time you load up the game, you have to sit through the credits. Very dull. This is not a problem, though – you won't be loading it up that often.



No one wants to be friends. *Alone in the Dark 3* offers some impossible arcade shooting action.

Initially, though, impressions are good. Your character might look like a reject from the polygon-modellers school, but you can move him with full degrees of freedom in each game scene, scaled with perfect perspective. Each time you change from one scene to the next, the camera angle changes, which means that in some scenes you control Edward from behind and in others from the front. This might sound rather confusing, but, in fact, this system works well.

Unfortunately the same is not true of the rest of the control interface. Instead of having a health/inventory bar on screen all the time, you have to call up a special option screen, stopping the action every time you want to make use of a collected item – making the gameplay frustrating. In a similar vein, the all-important Game-save option is so ill-thought-out that it'll have you saving your position even though your character is already dead and hanging upside down outside the saloon.

Commandment three in the old testament of computer games states: 'The game shall never behave in such a way that the player feels he has been treated unfairly.' *Alone in the Dark 3* is guilty as charged. It seems that the ghostly inhabitants of Slaughter Gulch (honest) don't take too kindly to breathing visitors. As a consequence they tend to shoot first and string you up later. The game interface leads you to believe that you have the ability to fight back, and even equips you with a gun to do so. When it comes to immortal combat, however, it is inevitable that one of three things will happen. First the camera angle will change suddenly, leaving you completely sightless and with no hope of aiming at your enemy. Second, if you can see to aim, your bullet will end up anywhere but embedded in the rotting zombie flesh of your opponent. Third, before either of these things can happen, your character will freeze, become completely deaf to your instructions, and smilingly absorb however many bullets it takes to kill him.

Alone in the Dark 3 is a poor game. It fails to update the series in terms of technology, and in terms of gameplay it seems almost a regressive step. You may well have enjoyed it once, but on the strength of this sequel it's unlikely you'll enjoy it again. **JAMES ASHTON**

3D pictures of the objects you've found are all very nice, but trying to use all of them in every conceivable way via the game's interface is very frustrating.

ALONE AGAIN OR...

Alone in the Dark and *Alone in the Dark 2* were reviewed back in issue 30 of MACFORMAT, receiving scores of 75% and 78% respectively. If you missed them, turn to page 121 to order your back issue.

ALONE IN THE DARK 3

Price: £44.99. **Out:** now.
Requires: LC or better, 4Mb of free RAM, System 7 or later, 256-colour monitor, CD-ROM drive (double-speed recommended), 7Mb of hard disk space.
Contact: Infogrames on 0171 738 8199.

GRAPHICS 69%
Decidedly dated. Cartoon-style backgrounds and polygonised characters.

SOUND 64%
Annoying sound effects and music. You can turn both off, and you will.

GAMEPLAY 55%
Fails to engage. Death is the all too frequent outcome of casual enquiry. Deeply frustrating.

MACFORMAT RATING 61%

BackPacker

Deep inside even the most retiring person lies an intrepid explorer yearning to roam the world. At least, that's what this globe-trotting game counts on...

For reasons best known to yourself, you've decided to travel around the world with nothing but your trusty rucksack for company. Unfortunately, there's one slight problem – you don't have enough money for the whole trip. Brushing aside such mundane concerns, you head off in search of excitement and adventure.

BackPacker begins in London, where you must return when your trip is over. The idea is that you choose your destination, fly there, look around and then check into a hotel. But all of this sight-seeing drains your limited finances and only an honest day's work will keep your expedition afloat.

A short stroll to the local employment agency reveals a bewildering array of professions for you to try your hand at. Once you've accepted a job, you're thrown in at the deep end. To prove your worth, you must answer multiple choice questions and solve puzzles relating to your chosen profession. For each correct answer you earn a day's wages; for each wrong one you lose the equivalent amount.

As you can imagine, it's all too easy to bankrupt yourself with too many wrong answers, but don't worry, there are always the folks back home to bail you out. Unfortunately, as in real life, they soon get wise to your scheme and refuse to lend a hand if you make too many begging calls home.

Unless your grasp of geography and general knowledge happen to be well above average, you'll find these brain teasing ordeals difficult. The questions are so specific to the particular countries and professions that you don't feel you're being given a fair chance. How, for example, are you expected to know the finer points of veterinary medicine, as is necessary when you take that job at the Amsterdam zoo?

Hotel Silenté
Old, pleasant hotel with a good location in the city. Continental breakfast. City traffic.
18720 lire/night
Check in
Go to town

Before you can get a job, you need to book into a hotel and get yourself an address. The hotelier will ask you lots of questions about the city.

Each city comes with a map. Click on the icons and you're led to sites of local interest, the hotel or an employment agency.

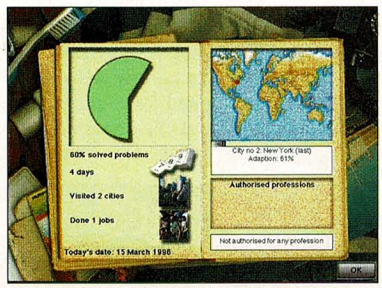
Oslo * NOR57 * gate N4
Lisbon * PTL605 * gate L2
Vienna * AUS767 * gate E9
Rome * ITA301 * gate B58
Reykjavik * ICL220 * gate E13
Berlin * BRD302 * gate B77
Montreal * CND108 * gate C29
Casablanca * MOR067 * gate

At each airport you can choose your next destination. Flights change daily, but each extra day you spend in the city costs you money.

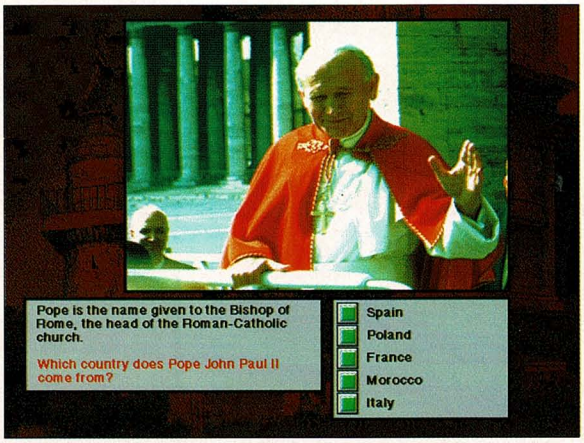
Then there's the feel of the whole thing. *BackPacker* lacks a sense of humour. At the point where you've squandered your last rouble, franc or peseta, the program clinically informs you that you are now out of money and therefore no longer exist. A fine reward for a position that may well have taken you several hours of play to reach – why not a few words of encouragement before you wearily head off over the horizon once more?

To its credit, *BackPacker* provides endless variety and you pick up a lot of knowledge about the countries you visit. The art of being a good guest, however, is always knowing when to leave, so once you think you've earned enough of the local currency, head off to the airport and see which flights are leaving.

Despite being a strange cross between a multimedia atlas and an adventure game, *BackPacker* rewards your efforts with many 'Well, I never knew that' moments. While the presentation isn't exactly inspiring, there is an excellent educational game buried underneath. **Graham Barlow**



Clicking on your briefcase shows how far you've progressed in the game. But why isn't it a backpack? After all, the game isn't called *BriefCaser*.


Pope is the name given to the Bishop of Rome, the head of the Roman-Catholic church.
Which country does Pope John Paul II come from?
Spain
Poland
France
Morocco
Italy

Here's the sort of brain teaser you can expect when staying in Italy. The answer to the question is Poland, in case you didn't know.

BackPacker

Price: £34.99. **Out:** now.
Requires: LC or better, 8Mb of RAM, System 7 or later, 265-colour monitor, double-speed CD-ROM drive.
Contact: BMG Interactive, 0171 973 0011.

Graphics 64%
Some impressive stills, but by and large, the rest will leave you cold.

Sound 75%
Each country you visit has its own personalised ditty. Nice touch.

Gameplay 69%
There's a lot to do here, but the questions get demoralisingly hard.

MACFORMAT RATING 71%

I COULD DO THAT

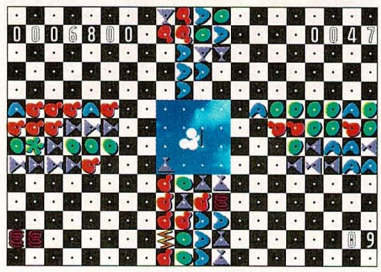
The range of professions you can try your hand at in *BackPacker* is astounding. How do you fancy life as a photographer, secret agent, inventor, jeweller, carpenter, artist or zoo keeper? Of course, if you want real excitement, there are also jobs as historians, librarians and textile workers.

TATIMIXEDIA

BackPacker was developed by new Swedish multimedia developer TatiMixedia. Not to worry, the finished product is anything but tatty.

Zoop

Puzzle games require big brains, but being unable to find one in the MACFORMAT office, we turned to some esteemed academics to review this vivid arcade game.



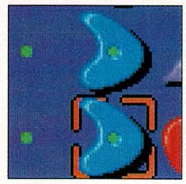
This is level nine. Note the variety of encroaching shapes and the mad colour scheme. Deadly if you're a migraine or epilepsy sufferer.

HITHERTO UNPUBLISHED

The never-written papers mentioned in this article remain unpublished in the UK, but might be available from your friendly local herbalist.

The late Prof Lev Stanislavski was adamant that humans would not be able to contrive a more perfect form of arcade puzzler than *Tetris*. In his *Ethics and Aesthetics in Videogamology* he espoused the minimalist principle of puzzle game design, concluding that: *'Tetris* is great, it will not be surpassed. Except, perhaps, by *3D Tetris*... My work is not over.'

One wonders, then, what place *Zoop* would have found among the Professor's theories. Although he shunned games in the final year of his life, *Zoop* is most certainly a pretender to the accolades which he lavished upon *Tetris*. *Zoop* is even consistent with O'Donaghue's hypothesis: it contains unelaborate graphics and lots of colour, it offers plenty of 'plinkety-inkety' music and it's based on the premise that funny-shapes are going to catch, shoot or otherwise violate an area of the screen belonging to the player.



You always know when a new shape is going to appear, because it's preceded by a box in which it materialises. Then the shapes in front of it roll one place closer to the centre of the screen.

Zoop is about protecting a square of territory in the middle of the screen from oncoming shapes. The four types of shape come from all sides. Shooting them is made tricky because your Zooper-shooter has to be the same colour as a shape in order to destroy it. When you shoot something that's not the same colour as your shooter, you swap colours with the thing you shot. Simple but hard.

Scheltung and those of the Luxembourg School applaud the 'simple but hard' principle, but have made it their business to punch holes in O'Donaghue's hypothesis (Dr O'Donaghue's refusal to adhere to School traditions by serving minestrone with a dented ladle notwithstanding). Scheltung himself has noted that a truly addictive game needs more than form; it requires structure. In *Building Tetris Block by Block* he is unequivocal on the matter: 'Any puzzle game must become faster and increasingly frustrating, and must include the introduction of new strategic elements as well.'

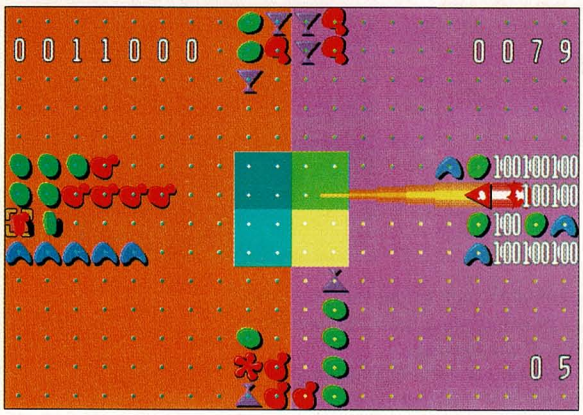
Zoop does get gradually faster as you play. The new shapes arriving on the outside of the screen appear more rapidly and in greater variety, reducing your chances of shooting out entire rows. Likewise, more strategic elements come into it. There are special shapes to shoot, enabling you to destroy more than one enemy shape at a time, and if you collect five springs the whole screen's cleared instantly and you pick up the points.

As you progress through the levels, the backgrounds are meant to increasingly distract your eye from the streams of invading shapes. This, however, is where Dean Harvey Williams of Berkeley's Modern School of CyberPuzzlry hits the mouse on the button: 'It's no good if the colours induce migraines,' he points out in *A Response to Day-Glo Video Art*. And *Zoop* can certainly dish out a headache with its garish screens.

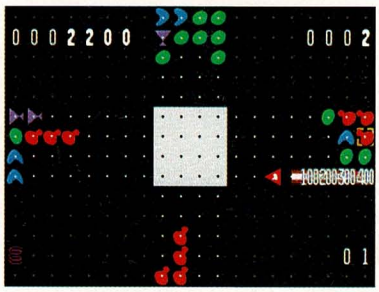
Aside from a colour scheme that could split even O'Donaghue's hard head open like a ripe melon, *Zoop* appears to have all the elements of an irrepressibly addictive game. The light jazz in the background is unobtrusive, while the gameplay is speedy yet simple, with a progressive element of challenge. The trouble is, despite all of its theoretical similarities to games like *Tetris*, *Space Invaders* and *Tempest*, *Zoop* somehow lacks that instant and lasting addictive quality. Why? Scheltung and O'Donaghue are working on it.

Gameplay is speedy, yet simple and logical, with progressive challenge

GARRICK WEBSTER



The Zooper-shooter, as the academics call it, makes a 'PCHEWZOOP' sort of noise as it shoots shapes. See the points hit the board.



Of all the levels, the first one's the easiest to look at. *Zoop* is zippiest on PowerMacs and sluggish on the minimum spec LCII.

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If one of those lines gets out of line, use the Line bomb to eliminate the whole thing. Handier than the Proximity bomb, but not as good as the Colour bomb.

ZOOP

Price: £29.99. **Out:** now.
Requires: LCII or better, 8Mb of RAM, System 7 or later, 16-colour, 13-inch monitor, 4Mb of hard disk space.
Contact: Viacom Newmedia 0181 846 9433.

GRAPHICS 60%
Simple and colourful, occasionally headache inducing.

SOUND 72%
Reasonably good easy listening, not completely annoying.

GAMEPLAY 75%
Good, but not addictive enough for what is otherwise a simplistic game.

MACFORMAT RATING 68%

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Zone Warrior

The Orbital Outpost Station is under attack. And yes, those supplies of methane-ice are under threat. Who is willing to combat the marauding attackers?

ASTEROIDS

You might find *Zone Warrior* to be something like a 3D version of *Asteroids*. If you want some 2D classic *Asteroid*-style gameplay, you don't need to look too far. Head towards the Ambrosia Web site and hunt out *Maelstrom* at **http://www.AmbrosiaSW.com/**

The nausea sets in early with *Zone Warrior*. For some unknown reason, the default control setup is the most complicated. Hence, if you dive straight into this 3D space flight shooter for the first time, you'll soon feel your stomach churning as your fighter ship spins incomprehensibly out of control – left, right, up, down, round and round and round, but never ever towards the polygonal shapes meant to be the enemy.

Try it for yourself. There's a playable demo of *Zone Warrior* on the Cover CD

You can easily fix the controls from the strange 'yoke' setting to 'point', whereby the ship is guided logically by pointing the mouse. The improvement in control that arises from this enables you to play on without vomiting, only to discover that *Zone Warrior* is a strictly limited game.

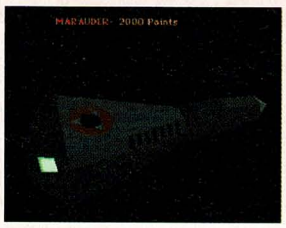
One look at the graphics gives it all away. Although *Zone Warrior* requires a PowerMac to run, the spaceships you have to destroy are uncomplicated and uninspired in form. Furthermore, they lack all but the most basic colours. The most complex looking ship in the whole game is the ubiquitous wheel-shaped space station which you have to defend. But as soon as this comes under attack and starts to break down into grey chunks, you realise that even the stuff you're protecting isn't that special.

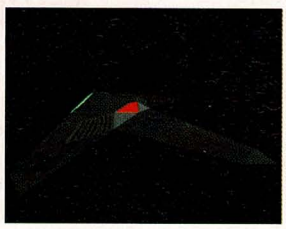
Having said that, *Zone Warrior* has some incredibly smooth and fast 3D action, and the graphics, though simple, are clear and crisp. A few constellations, nebulae and stars constitute the backdrops for the action and these look reasonable. This is no less than you'd expect, however, considering the constrained use of colour and high processor specification of the game.

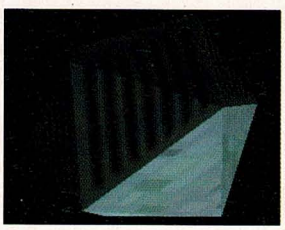
But it's in the domain of sound that the capabilities of the PowerMac have been truly under-exploited. Crunchy explosions, a few simple bleeps, a sad excuse for a voice sample and some synthetic phaser blasts are your lot. It's barely worth chasing down a Raider or a Cruiser to blast it to kingdom come when the explosion sounds slightly less stimulating than a small child imitating Power Ranger noises.

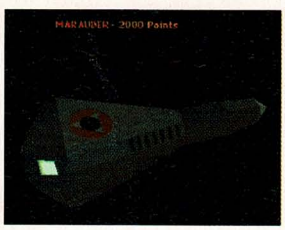
Of course, simplicity in the graphics and sound could be tolerated, and possibly even welcomed, if *Zone Warrior* had any decent gameplay to offer. But, sadly, no. Although the game presents you with 99 levels of play, each one is simply conceived, short-lived and generally easy. By the time you've played the first ten levels of the 99 on offer, you'll already have met every individual foe there is. From then on, the only increase in challenge comes through the incremental addition of Projectiles, Raiders, Cruisers and Marauders, as you ascend through the levels. The game is never compelling. Instead, it's rather chore-like.

With 3D action on offer from the likes of *Doom 2*, *Descent* and, soon, *Hexen*, there's little reason to give *Zone Warrior* a second thought. Considering what it is, it's vastly overpriced. Of course, the challenge it presents could be upped by switching the control settings back to the default, but then the main challenge would be keeping your breakfast down. **GARRICK WEBSTER**





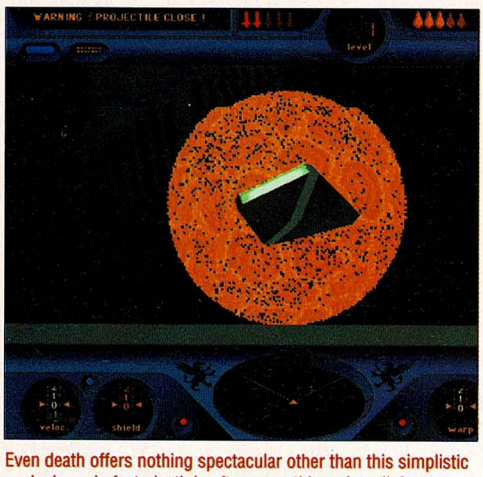




Objects from The Zone. Below are a few of the simple-looking 3D objects you'll run into while you're cavorting in that area of space they call... The Zone.

If you destroy all the enemies before they injure your space station, you don't have to dock. A grateful benefactor, the station extends its tractor beam to make landing a bit easier.

When you've completed a level, you have to fly back to the safety of your space station where you're rated on your performance and rewarded with extra lives, points, and extra missiles.



Even death offers nothing spectacular other than this simplistic explosion – in fact, death is often something of a relief.

Taking out one of the alien Command Ships isn't simple. You have to fly up its rear end, shoot its reactor, then fly out again.

ZONE WARRIOR

Price: £39.99. **Out:** now.
Requires: any PowerMac, 5Mb of RAM, (8Mb recommended), System 7 or later, 256-colour monitor.
Contact: Softline on 0181 401 1234.

GRAPHICS 30%
Clear and simple. The backgrounds are reasonable, but you'd expect far more from your PowerMac.

SOUND 12%
Incredible under-utilisation of your kit. Bad. Bad. Bad.

GAMEPLAY 25%
There is gameplay, but it isn't developed much beyond level five or six.

MACFORMAT RATING 29%

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■ **Wacom A4 graphics tablet** with puck and pen, boxed, hardly used, VGC – £300. Nick ☎ 0181 694 9666 (6pm to 7pm)

■ **PowerBook 520c 12/160,** excellent condition, case, leads, mouse etc, StyleWriter inkjet printer – £1,600 ono. Frazer ☎ 01579 382823, e-mail **100752.564@compuserve.com**

■ **Quadra 840AV** 20/700 CD (300+ tray loading), System 7.5.1, accelerator 48MHz, CPU only, mouse, GeoPort, software, home use only – £1,750; Apple 16-inch monitor, tilt/swivel stand, cables, home use only – £400; internal Apple CD-ROM 300i, caddy loading – £100; Dacom Fastlane modem V.32, 9,600bps, V.42 error correction, MNP class 5 data compression, high speed cable – £100. ☎ 01444 245392

■ **IIci 20/500,** 13-inch Apple monitor, mouse, keyboard, 24-bit card – £850. ☎ 0113 239 0880 (day), 0113 250 0701 (after 6.30pm)

■ **Apple One scanner** with *Ofoto* software, cables and manuals – £200 ono. Giles, Somerset ☎ 01934 712595

■ **Newton Message Pad,** 1Mb storage card, Mac connection kit, fax/modem and various shareware, all boxed – £210. Chris ☎ 0113 250 2645 (eve)

■ **Quadra 610** 12/160 CD, extended VRAM, CPU only, with *Discworld, Iron Helix* and *Dracula* CD-ROM titles – £750. ☎ 0115 946 9802

■ **Apple 12-inch,** 256-colour monitor, excellent condition – £70 ono. Surrey ☎ 0181 646 7598

■ **Supra fax/modem,** 14,400bps, bargain, unwanted present, complete with manual and cables. ☎ 01582 504487

■ **LCII 8/80,** 14-inch Apple colour monitor, StyleWriter II, CD300e+, Microlin FX modem, *ClarisWorks*, System 7.1 – £795 ono. Nottingham ☎ 0115 939 5328

■ **Performa 475,** CD300e+, Performa Plus 14-inch monitor, keyboard, mouse, *ClarisWorks* 2.1, System 7.5. *PC Exchange*, month old, boxed, all manuals – £750 ono. Grant ☎ 01674 830456 (eve)

■ **PowerBook 520** 4/230, complete with carry case and EtherNet transceiver, mint condition – £1,000 ono. ☎ 0151 259 3344

■ Internal **Apple 40Mb hard disk** – £40; 2 x 8Mb 72-pin SIMMs – £150; 2 x 16Mb SIMMs – £300. Ben ☎ 01274 403858 (pm)

■ **PowerMac 7500/100** 16/500, three months old, boxed never used, 15-inch Apple monitor, mouse, mat, microphone, mags, disks, *Illustrator 5* – £2,500 ono. ☎ 01326 312025

■ **Apple multimedia system** 300e CD, power speakers, SCSI software, 12 months old – £180. ☎ 01925 414540

■ **Performa 200** (Classic) 4/40, System 7.1, excellent condition, manuals, *ClarisWorks*, US Robotics 14.4K fax/modem – £400 the lot. Steve, Derby ☎ 01332 760573 (after 6pm)

■ **Quadra 660AV** 12/260 CD, 14-inch colour monitor, keyboard, all boxes and manuals – £950. David ☎ 01865 790499 (day), 01865 873079 (eve)

■ **Apple comms solution** for the Performa range, brand new, unwanted present, all packaging etc – £80 ono. Bruce ☎ 01348 873302

■ **PowerBook 190/66** 4/500, as new, with box – £950 ono. George ☎ 01483 489907 or 01276 64617

■ **SIMMs 72-pin,** 70ns, 4Mb – £90; 8Mb – £180; *Lemmings* new, unregistered, unopened – £10. Luke ☎ 01727 859833

■ **PowerBook Duo** 210 4/80, external 3.5-inch disk drive, System 7.1, *ClarisWorks*, other software included – £650 ono. ☎ 01565 873853

■ **4Mb 72-pin SIMM** from Performa 630 – £80 ono. ☎ 01909 482446 (after 6pm)

■ **LCIII 4/80 bundle,** 14-inch monitor, mouse, extended keyboard, double-speed CD-ROM, System 7.5, *ClarisWorks, Photoshop, Myst* and many more – £750. ☎ 01366 728048

■ **Performa 630CD** 8/350, 15-inch monitor, little used – £650 ono. ☎ 0181 946 5293 or 0181 944 7114 (day), 0181 946 7002 (eve)

■ **Apple A3 colour printer,** PC and Mac compatible, little used, excellent condition, spare coated paper – £430 ono; Apple Select 360 laser, 600dpi, 10ppm, 7Mb of RAM, hardly used, new condition, superb text and graphics, new toner cartridge – £785 ono. ☎ 01904 635366

■ **CD300 external CD drive,** complete with all leads and manuals – £125 ono; *ClarisWorks 1.0* – £20; *Civilization* – £20; *SimLife* – £8. Duncan ☎ 01494 864643

■ **Performa 600CD 5/80,** 13-inch Trinitron monitor, mouse, keyboard, System 7.1, *ClarisWorks, RAM Doubler,* under 12 months old, excellent condition – £700. Roger ☎ 01494 774288 (eve)

■ **100Mb Zip disks** for sale, unused – £10 each ono. Joseph ☎ 0171 625 9176 or mobile ☎ 0973 256723

■ **Mac LCIII 4/80,** CPU only, boxed, manuals, superb condition – £300 ono. Peter ☎ 0181 444 4409

■ **IIcx 8/80 CPU** only, System 7.5 – £325 ono; 4 x 1Mb 30-pin SIMMs, suit older Mac – £50 ono. ☎ 01732 770414

■ **Newton 100 Message Pad,** as new, boxed, with all manuals and documents – £85. ☎ 0181 886 3695

■ Hewlett Packard **DeskWriter 510,** light use only, boxed, new cartridge, with manuals and disks – £100. Jon ☎ 01782 304479 or mobile ☎ 0802 284246

■ **Performa 6200** PowerMac, CD 24/500, 603 processor, 75MHz, 15-inch multiple scan monitor, keyboard, mouse, FPU, six months old – £1,300. Guy ☎ 0171 735 5926

■ Three **EZ SyQuest cartridges,** virtually unused – £10 each. ☎ 01773 827123

■ **4Mb 72-pin SIMM,** 80ns, came from a brand new Performa 630, one only – £50; Canon CLC10 colour copier, scanner, printer with Mac IPU interface, excellent condition, cost £6,000 – will sell for £2,800. Matthew ☎ 0181 744 0433 (office hours)

■ **14-inch Macintosh colour monitor,** boxed – £120; GeoPort modem for AV Mac – £50; both items light use only. Chris, Twickenham ☎ 0181 894 4818

■ **8500, 120MHz, 16/2Gb CD,** plus *Microsoft Office, Adobe Premiere 4* – £3,200. Hants ☎ 01420 562935.

■ **PowerMac 6100/60** 16/950 and lots of software, *Quark*, games etc – best offer over £1,000. Alex ☎ 0131 557 5577 (work), 0131 557 9528 (home)

■ **Dye sublimation printer,** Tektronix engine, superb photographic results, 16Mb of RAM, includes two new colour ribbons worth £400, cost £6,000 – offers around £2,500. ☎ 01442 259815

■ **PowerMac 8100/80** 40/1Gb, 17-inch monitor and A4 Wacom Pad plus *Video Vision studio* boxed – £4,200. ☎ 01656 659096 (eve)

■ US Robotics **Mac 'n' Fax Sportster** 28,800bps modem, unwanted gift, barely used, boxed with software and manual £170 ono. ☎ 0171 370 0472

■ **Performa 630** multimedia with TV, 8/250, with software, guaranteed until February 1997 – £900 ono. ☎ 01603 259697

■ **Mac II 8/160,** Radius full page display (640/860), extended keyboard, mouse, some software, System 7.5 – £400 ono. ☎ 01442 240053

■ **Performa 475,** *ClarisWorks,* with Zoom 14.4K fax/modem – £575. London ☎ 0181 741 5170

■ **LCIII 8/80,** 14-inch colour monitor, CD300e+, keyboard, mouse, System 7.1, perfect condition, home use, *ClarisWorks 2.0* included – £695. ☎ 01788 536096

■ **32Mb SIMM,** 72-pin, 70ns, NEC, 10 months old – £500 or offers. ☎ 01745 590984

■ **Mac Classic II,** 2/40 inc keyboard and mouse, VGC – £450. ☎ 0121 428 2006

■ **Performa 450** 8/120, 1 year old, 14-inch colour Performa Plus monitor, VGC, boxed, *ClarisWorks 3.0* and *FileMaker Pro 2* – £800; SIMMs 6 x 1Mb 32-pin – offers. ☎ 01780 721898 or e-mail **dmcleam@worldscope.net**

■ **PowerBook 145B** – £350; HP DeskWriter printer for PowerBook, as new – £90. West Midlands ☎ 01384 830432 (eve)

■ **LC475 8/240,** CD300, 14-inch monitor, keyboard, mouse – offers please. Birmingham ☎ 0121 454 1867

■ Tornado **14,000bps fax/modem** with cables and books, VGC – £120 ono. John Paul ☎ 0181 857 2591 (eve)

■ **LCII 8/80 CPU,** all manuals, all in very good condition – £325 ono. Duncan ☎ 01494 864643 (eve and weekends)

■ **LC475 4/80,** System 7.1, HP DeskWriter 310 printer, monitor, *ClarisWorks 2, Think C 6* – £600. ☎ 01252 316231

■ **8Mb 72-pin SIMM** – £125. Leicester ☎ 0116 276 2643

■ **LC 6/40,** 33MHz accelerator card with FPU plus mouse – £150; Apple external CD-ROM drive – £40. Offers? Kevin ☎ 01703 207906

■ **Quadra 840AV** 8/230 CD, plus business, graphics and video software – only £1,800. Chandra ☎ 0973 542904

■ **IIvx,** 20Mb of RAM, 21-inch greyscale monitor, very reliable – £900 ono. Kingston, Surrey ☎ 0181 296 9097 (daytime only)

■ Four **4Mb 30-pin SIMMs** – £80 ono. Steve ☎ 01483 568448 (answerphone)

■ **PowerMac 6100/60** 16/250CD, mouse, manuals, as new – £750. Norfolk ☎ 01263 711398

■ **PowerBook 520** 4/240, System 7.5, *Claris 3, RAM Doubler, Word 5.1,* bag – £950 or will part exchange for Performa 5300. Robert ☎ 01224 635686 (before 8pm)

■ **Performa 5200** CD/TV 8/500, only four months old, almost new, many CDs and manuals, boxed, as new –

only £1250. David ☎ 01784 4334466 (office hours)

■ **4Mb 72-pin SIMMs** – £45; 44Mb SyQuest drive and four cartridges – £150; *Newton Graffiti* – £20; Newton fax/modem – £30. Fitz ☎ 01438 820887

■ **Newton MessagePad 120,** boxed, with manuals and software. Good condition – £195 ono. Tim ☎ 01908 265162 (after 6pm)

■ Fax/modem **Apple Personal Communications kit** (internal) for Performa, brand new, boxed, completely unused – £80. ☎ 01382 580961

■ **NEC double-speed CD-ROM,** plus *San Diego 200* and *Microsoft Dinosaurs*. three months old, virtually unused, full guarantee – £85; *Grolier Encyclopedia* – £20. ☎ 01382 580961

■ Eight 1Mb 30-pin **SIMMs** (LC etc) – £15 each; also 256K VRAM – £5. ☎ 01382 580961

■ **Mac Plus** 1/20, very good condition, System 6 – £200 inc keyboard, software and all manuals. David ☎ 01932 562936

■ Two 4Mb 30-pin **SIMMs** – £75 each. Oxford ☎ 01865 723255 or e-mail **RYAND@oup.co.uk**

■ **6100/60** 8/250, 15-inch monitor, keyboard, mouse, in good condition, HP550c DeskWriter colour printer with nine new ink cartridges – £1,600, can split; System 7.5, DOS 6.22, Windows 3.1 ☎ 01734 616230 or 0956 612455

■ **SyQuest 44Mb** 5.25-inch drive, with three cartridges, home use, very good condition – £125. Darren ☎ 0181 9988665

SOFTWARE FOR SALE

■ ***Marathon*** – £20; *Star Trek 25th Anniversary* – £15; *Dark Seed* – £10; *Iron Helix* – £10; *SimCity 2000* – £18 (swaps considered eg *Syndicate*). Fife ☎ 01592 200699

■ ***Dark Forces*** **CD-ROM,** new, unused – £25. ☎ 01407 741063 (after 6pm)

■ ***Photoshop 2.5LE,*** unopened, unregistered, documents, manual, part of scanner bundle – £120. Roy ☎ 0181 967 3048

■ ***Doom 2,*** boxed, unregistered, as new – £25. ☎ 01489 581310

■ ***Microsoft Excel 4,*** sealed, unused, complete with all manuals – £65 ono. ☎ 01702 203668

■ ***Director 4*** – £400; *Photoshop 3* – £180; *Adobe Illustrator* – £200; *Raydream Studio* – £150; all only two months old. Will ☎ 01746 768846 (before 5.30pm)

■ **Training video tapes,** 5 x Mac-Academy *Illustrator 5.5,* original price £240 – will accept £100. ☎ 01442 870687/384232

■ ***Myst,*** *Journeyman, Flying Nightmares, Leyte Gulf, Monkey Island, Nascar,* all boxed, with manuals. Also *Animation Works,* boxed, with manuals – offers. Kevin ☎ 01243 532325 (daytime)

■ ***Theme Park,*** unwanted present, excellent offer, not even touched. ☎ 01727 830631

■ ***Video Director*** – £45; *RAM Doubler* – £30; *Monkey Island 2* – £15; *Prince of Persia* – £15; plus other games and CDs to sell or swap. Mark ☎ 01225 767941 (evenings)

■ ***Adobe Premier 4.0,*** unregistered, boxed, 2 x CD-ROM deluxe version, also disk version – £240 ono. ☎ 0151 604 7276 (day) 0151 648 1759 (eves)

■ *PowerPack:* ***Speed Doubler and RAM Doubler*** for PowerMac, unregistered, less than one week old, collect if possible – £75 ono. ☎ 01463 230 803

■ ***KidPix,*** boxed, manual. Robin ☎ 0181 7774078

■ ***RAM/Speed Doubler*** – £40; *Doom 2 CD* – £30; including p&p. Marc ☎ 01382 502050 (after 7pm)

■ ***Microsoft Office 4.21*** for Mac and PowerMac, all original disks and manuals, brand new, boxed, unwanted prize – £300 ono. ☎ 0171 376 7175

■ ***Discworld*** – £20 (CD-ROM), boxed as new, *Marathon* – £25 (floppy), *Indiana Jones, Fate of Atlantis* – £12; prices inc p&p. Glenn ☎ 01303 246782

■ ***RAM Doubler 1.5.1,*** excellent condition, including all manuals – £35 inc p&p. Satty ☎ 01203 615029 (after 6pm)

■ ***Aldus FreeHand 4.0,*** *Illustrator, Lotus 123, Microsoft Office 4.2, Photoshop 3.0,* all unregistered. ☎ 01483 566266 (eve)

■ ***ClarisWorks 3.0,*** all original manuals and disks, can deliver and install, bargain for quick sale – £35. Rory ☎ 0181 567 1132

■ ***Norton Utilities 3.1,*** original disks – £45. Graham ☎ 01703 786327

■ ***Lunicus*** – £10; *Astrochase 3D* – £10; *Spelunx* – £10; *RAM Doubler* – £25; *PopUp Folder* – £15; *Star Trek* soundware – £10; *Star Trek* screensaver – £10; *AutoDoubler 1.0* – £10; *Key Fonts Pro* (121 fonts) – £15; *Kai's Power Tools* £40; *Wraptures* CD-ROM textures – £25, *Wrapture Reels* CD-ROM movies – £25. ☎ 01344 779886 (eve)

■ Boxed copy of ***Microsoft Works 3,*** manuals and five disks in mint condition – offers. Robert ☎ 01224 635686 (before 8pm)

■ ***Myst*** – £20; *Prince of Persia* – £10; *Where in World... San Diego deluxe* – £30; *BestBooks Accounts* – £50. Matthew ☎ 0181 744 0433 (office hours)

■ ***Photoshop 2.5.1*** boxed – £75; *FileMaker Pro 2.1* boxed – £50; *ClarisWorks 4.0* boxed – £40; other software and utility software also available. ☎ 01822 840549 (after 6.30pm)

■ ***SmartSketch 1.0*** – £40; *StuffIt Lite* – £8; *TurboCAD* – £25; all boxed and unused. ☎ 01229 583149

■ ***ClarisWorks 3*** – £25; *Prince of Persia* – £15; *Iron Helix CD* – £15; all with documents, buyer to collect. Christine ☎ 01225 810780.

■ ***FreeHand 5,*** unused, unregistered, boxed, manuals – £200 ono. ☎ 01329 284854 (after 7pm)

■ ***ClipMaster Pro*** **CD** (5,001 TIFF images), unused, unopened, unregistered, includes book of images – £23.50 inc p&p. Paul ☎ 01932 568482

Inside Macintosh CD-ROM – £40; *Toolbox Assistant* – £40; *HyperCard 2.2* – £30; programming books too. Mark ☎ 0181 224 6975 (after 7pm)

■ ***Gobliins 1*** – £10; *Gobliins 2* – £10; *Gobliiins 3* – £10; all boxed, with manuals. ☎ 0181 224 6975.

■ ***Microsoft project 3,*** as new including sealed manuals – £60; *Discworld,* with manuals – £15; *Lemmings,* with manuals. Jon ☎ 01793 524963

■ ***ClarisWorks 2.0,*** new, with manual – £40; *Personal Press 1.0* (DTP package), as new – £50. ☎ 0121 428 2006

■ ***StrataStudio Pro 1.5.2*** and *1.1,* registered but transferable, including all original packaging and extras – £700. ☎ 01483 452336.

■ ***Passport Encore*** musical score notation and *Mastertrax Pro MIDI* sequencing software – £200; Mac mouse – £30. Brian ☎ 01268 559284

■ ***Doom 2*** **CD,** *Dungeon Master 2* CD, *Gabriel Knight* games for sale or swap for *Marathon* or other games. Paul ☎ 0181 672 2597 (eve)

■ Four ***Softkey*** **CDs** – £18; clip art, fonts, movie clips, audio clips, photos, 9,000+ items. Unwanted gifts, unopened. ☎ 01475 686378

■ ***Wing Commander 3*** (four CDs), boxed, as new – £32; *Red Baron* and *Rise of the Dragon* – £10 ono. Duncan ☎ 01779 812873

■ ***SoftWindows 2,*** PowerMac – £160; *CorelDRAW! 3* (PC version) – £45. Both mint, boxed, cards, manuals. ☎ 01206 851068

■ ***Logo Corrector 2.2,*** £100 off RRP, mint condition, not used – first offer over £100 accepted. ☎ 01895 237246 (eve 7pm-10pm)

SWAP SHOP

■ Swap 690 piece 3D puzzle for **Mac software or disk/disk storage;** swap Casio SA-21 electric keyboard for Apple SuperDrive 1.4Mb or any storage for CDs, SyQuest or optical storage drive; swap SNES, games, pads, mouse, cables for any good

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USER GROUPS

Need hands-on help with a Mac problem? Want to swap shareware or freeware, or just meet other Mac enthusiasts? Try a user group near you.

■ The Mac Factory BBS. Specialises in Mac shareware. ☎ 01977 708911 (24hrs). SysOp Mark Evans. (MF37)
■ Massacre Bulletin Board now on-line. Modem speeds up to 14,400 24 hrs. ☎ 0131 447 9199 (MF37)
■ Red Apple Software, the Distribution Group! Non-profit making shareware authors, an established network for old & new programmers. Write to: RAS, Lane End, Oak Tree Lane, Tavistock, Devon PL19 9DA or log on to AppleEye BBS on 01234 822180. Red Apple/PentriSoft in the Computing conferences folder. (MF37)
■ The SE Essex Mac User Group meets in Southend, second Monday of the month at 8pm. Mike Foy ☎ 01702 468062 or e-mail **mac@mikefoy.demon.co.uk** (MF38)
■ A new first class BBS, Xnet UK ☎ 01992 550733. A local number to all London numbers, devoted to all subjects for problems. (MF38)
■ Media Club – the best Portuguese Mac user group. Free on-line help via Telnet International. Please send SAE to Media Apartado 15006-1073, Lisboa, Codex, Portugal. (MF39)
■ Australia Queensland Toowoomra Mac user group. 202 Darling Street, Drayton, Toowoomra, Queensland, Australia 4350 or ☎ 61 076 333383 or fax 61 076 333383 (MF39)
■ Appel Club Eindhoven (ACE), 80 members, informal setup, ten meetings a year, fee Dfl 25/yr. Contact Arie Nagel, Puthof 5, 5655 AM Eindhoven, Netherlands ☎ 040 2523879 or e-mail **a.p.nagel@tm.tue.nl** (MF40)
■ New Mac user group, Helensburgh, Strathclyde. Peter Stevens ☎ 01436 676621 (MF40)
■ Mac User Oxford – non-profit user group and shareware library, seasonal shareware catalogue, small fee for printing etc. SSAE: 30 Sandfield Road, Headington, Oxford, OX3 7RJ. (MF 41)
■ Hampton Court Users Group. Informal group which meets approximately every six weeks to exchange ideas and help each other. ☎ 0181 399 9416 or 0181 940 0673 (MF 42)
■ Artists archive and news service. Contact The Research Station ☎ 0181 778 6547 (24hrs) 38,400bps plus Website at **http.www.metamute.co.uk/r_station** (MF43)

Groups are listed here for six issues, then they are deleted. The code at the end of each entry is the last issue in which it will appear. Should you wish to renew your entry, send in the coupon from page 134. If your group isn't already listed here, then send us your details and we'll do the rest. This list is provided as a free service for amateur, non-profit-making Mac user groups. MACFORMAT does not endorse or recommend any group and cannot be held responsible for any problems you might suffer as a result of contacting any of the groups advertised here.

programming or authoring tool (not *HyperCard*). Brooke ☎ 01276 600053
■ **Bowie's *Jump;*** Eno's *Headcandy;* also numerous MACFORMAT and *MacWorld* CD-ROMs. Will swap for anything to do with music. ☎ 01745 832134.
■ ***Indiana Jones and the Fate of Atlantis,*** will swap for similar or sell – £30. ☎ 01463 230803
■ Swap Mac-Fax 14.4K V.42bis **external modem** for 13-inch plus monitor or printer. Details to Brian, 32 Kier Hardie Crescent, Newport, Gwent NP9 9DQ.
■ ***Doom 2*** for your *Warcraft.* Tommy, Bristol ☎ 0117 924 7475 (after 6pm)
■ ***Doom 2,*** will swap for *Full Throttle* or *Dark Forces* or buy – £35 ono. ☎ 01353 669708

WANTED

■ A set of **System 7.1 master disks** (System 7.0 would be okay); SE bits, especially 800K floppy drives and hard drives, also CD-ROM drive (single-speed would be okay). Must be cheap. ☎ 0161 285 9527
■ Wanted ***GE Filters KPT 2.1;*** *KPT Vector Effects; KPT Convolver; Fractal Design Painter 4/3;* any other *Photoshop* plug-ins. ☎ 01442 870687/384232
■ ***Civilization*** wanted – cash paid, or will swap for *Myst.* ☎ 0151 794 7306
■ ***Text Bridge*** or *Omni Page Direct* OCR for use on LCIII – cash or will swap for *Helix Express* relational database. ☎ 0161 998 3215 (eve)
■ ***Concertware*** music score composition software (free with recent Performa systems) – £20 offered for CD and manual. ☎ 0114 258 9314 (eve)
■ **Performa 6200** or similar wanted, also keyboard, mouse and monitor. Midlands ☎ 01785 243489 (after 6pm)
■ ***Connectix PowerBook Utilities 2.0.2*** or later. Can swap. Surya ☎ 0181 983 1433
■ Software for **Momentum Port Juggler** wanted. Can anyone please help? ☎ 01423 563103 (phone/fax)
■ **PowerMac 7100,** CPU only, but preferably with monitor, keyboard, printer and extra memory – cash waiting. Andy ☎ 01633 613342
■ ***Macintosh Bible,*** *Little Mac Book, Tabs and Indents* by Robin Williams. Any other manuals relating to the Mac; typefaces *Novarese, Ocean Sans, Tekton.* ☎ 01753 651826
■ ***MS Works 3*** wanted, with manual and master disks. ☎ 0181 870 4302 (office hours)
■ **StyleWriter 1** for Classic. ☎ 0191 515 2512
■ All **obsolete, defunct, battered, unloved** and abandoned Apple computers and bits wanted by dabbler, will buy, or possibly swap? Rob ☎ 0115 981 5675
■ Wanted, **old Macintosh/Apple 2 magazines** (especially MACFORMAT) and cover CD-ROMS or PD/shareware compilations. Pay postage and 5p to 75p for each magazine and 25p to £1.50 for each CD. ☎ 01935 25974
■ **Psion Organiser II** wanted, with any accessories, will pay postage; also 500Mb external hard drive wanted. ☎ 01787 277769
■ CD-ROM 'Paper Planes' game (***Glider Pro***) by Wp Novell. Do you have it, or know where to get it? ☎ 00 31 23 5638318 or e-mail **huibbol@worldaccess.NL**
■ **StyleWriter,** StyleWriter II or HP 320. Leicester ☎ 0116 2762643
■ **Native 3D modelling software** wanted: *Form Z, Sculpt* or *Presenter Pro.* Francois ☎ 0181 806 6662 (mornings)
■ **Newton accessories;** Performa TV or video card; 128Mb optical drive. ☎ 0181 692 8129
■ **PowerBook 170,** any condition, so long as the screen is okay. ☎ 01462 451357
■ **Rubbish wanted!** I'm rebuilding a couple of systems, and need obsolete Macs and spares. Don't bin it – sell it. ☎ 0115 914 1260
■ Mac vinyl cutting software, ***Cutline*** or ***Freesign.*** ☎ 01286 880190
■ **Mac Plus mouse** wanted, must be in good working order, urgent. Graham ☎ 0141 332 4513
■ **Newton connection kit** software – any offers. Ali, North Wales ☎ 01248 364188 or e-mail **101535.1503@compuserve.com**
■ I have a sad Mac – it's run out of memory. Can you help? 2 x 2 or 4 x 4 **SIMMs for LC.** Nick ☎ 01202 424558

MAGAZINES

■ **MACFORMATS 4 to 31,** with most coverdisks, for sale – offers. David ☎ 01538 702723 (5pm-6pm Tuesday, Wednesday, Friday)
■ Magazines, **MACFORMAT 1 to 30** complete with floppy/CD; also *The Mac* 1-20 – offers; *Populous* – £10; *Crime Patrol* – £15; *Wolf* – £10. ☎ 01628 486745.
■ **Mac magazines** and cover CDs, MACFORMAT 28 to 35; *Mac Action* 1 to 9, various *The Mac* and *Internet* magazines – all £1.50 each or £2.50 for two. Norwich ☎ 01603 451839

EVENTS

■ **Multimedia showcase** at Danish Large Future Festival. Please send your work to us for consideration and the best will be used in the festival. Call ☎ 00 45 861 82157 for further details.

UK USER GROUPS

The User Group Council provides a list of all the user groups registered with them. If you wish to contact the Council, ask for John McKnight ☎ 0181 314 5555.

Local user groups:
■ Aston University Mac UG, Birmingham area, contact Ray Tier ☎ 0121 359 3611
■ Berkshire Mac UG, Ian Burn ☎ 01734 813669
■ Blackburn Mac UG, Roger Moreton ☎ 01254 670043
■ Bournemouth Mac UG, Barry Cheesman ☎ 01202 615859
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■ Cambridge Apple UG, Ian Archibald ☎ 01223 311157
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Buying advice

Whether you're buying by mail or in person, here are a few basic, sensible precautions to bear in mind. Note that everything here applies to buying from a business; most of it does *not* apply to buying from a private seller in MACFORMAT's reader ads pages.

Always be absolutely clear about what is included in the price – postage and packing? Any necessary cables, etc? VAT? By law, an advert must say *explicitly* if VAT is not included; if it doesn't, VAT *is* included. But this could be in the small print – so make sure you read it all! If you're buying in person, check that everything is there and that it all works properly before you leave the shop. If you're buying by mail, ring the supplier first to confirm the price and availability, and ask what your options will be if there should be any problem. Find out when you can realistically expect delivery. Always keep all the receipts and make records of all correspondence, whether it's by mail or by phone.

How to protect yourself

If you are buying goods of more than £100 in total value, use a credit card if possible. That way, if anything goes wrong, you'll be legally entitled to claim against the credit card company as well as the seller, even if the seller's gone bust. You might also get extra insurance – ask your credit card company.

If you don't have a credit card, pay by cheque or postal order (ask at your local post office). Never send cash through the mail – it can't be traced if it gets lost, you can't stop payment, and even if you have proof of posting, you can't prove how much you sent.

Keep records. If you're paying by credit card, keep a note of the exact time of the order and ask for an order number. If you're paying by cheque, make sure you fill in the details of the date, amount and payee's exact name on the stub – and keep it!

When a mail order arrives

Check everything carefully. If anything is missing, contact the supplier immediately. If something doesn't work, make all the obvious checks (the fuse, etc), but don't try to repair it. If there's anything you're not happy with, don't use it – if you do, you could be deemed to have accepted it.

If there's a problem

Whether you bought it by mail or in a shop, the law says a product must be:

1. 'of merchantable quality' (that is, broadly speaking, it must actually work);
2. 'as described' (in the advert or in person – and this criterion also applies when you're buying from a private seller); and
3. fit for the purpose for which it was sold or for the purpose you specified when you ordered it.

If it fails to meet any or all of these three criteria, then you are entitled to return the goods for a refund, receive compensation for all or part of the value, or get a replacement or free repair, depending on the seriousness of the defect. These are the 'statutory rights' that adverts always say are 'not affected' by any extra guarantees. The supplier cannot change or deny these rights.

How to complain

If you're not happy about something, always contact the supplier first and politely explain your problem. Most problems are sorted out at this stage with no fuss. But if yours isn't, put your complaint in writing, clearly stating your problem and including any relevant dates, etc, and send it to the manager or owner – ask for the correct name and job title. Give the supplier a reasonable time to reply – say, ten days or so.

If the problem is still not resolved, you may need to take some sort of legal action to enforce your rights. This need not cost you a lot of money. You should seek advice from a solicitor (ask about the free advice scheme) or from one of the following organisations (check in your local telephone directory):

- Citizen's Advice Bureau;
- Trading Standards Office (listed under your local council);
- Office of Fair Trading; or
- County Court (ask someone there about the 'small claims procedure').

The Classic System Crew

By Bob Lynch

Depression hits the System Folder...
Hmm Tsk..
What's up Chief?
What are we doing here, Karen? All we seem to do is try to keep pace with Apple's latest flights of fancy...
And they spend all of their time pushing up the speed, inflating the memory, adding all kinds of bells and whistles...
And our 680X0 machine could soon be phased out by the evil PowerMac. What is the point?
Rip!
What's the point? We've been taking part in the Technological Revolution, riding the surf of the Cyber-Age!
WHEE!
And we can nip down to the Fish Shop and buy some PowerPC chips. I've been saving my dinner tokens.
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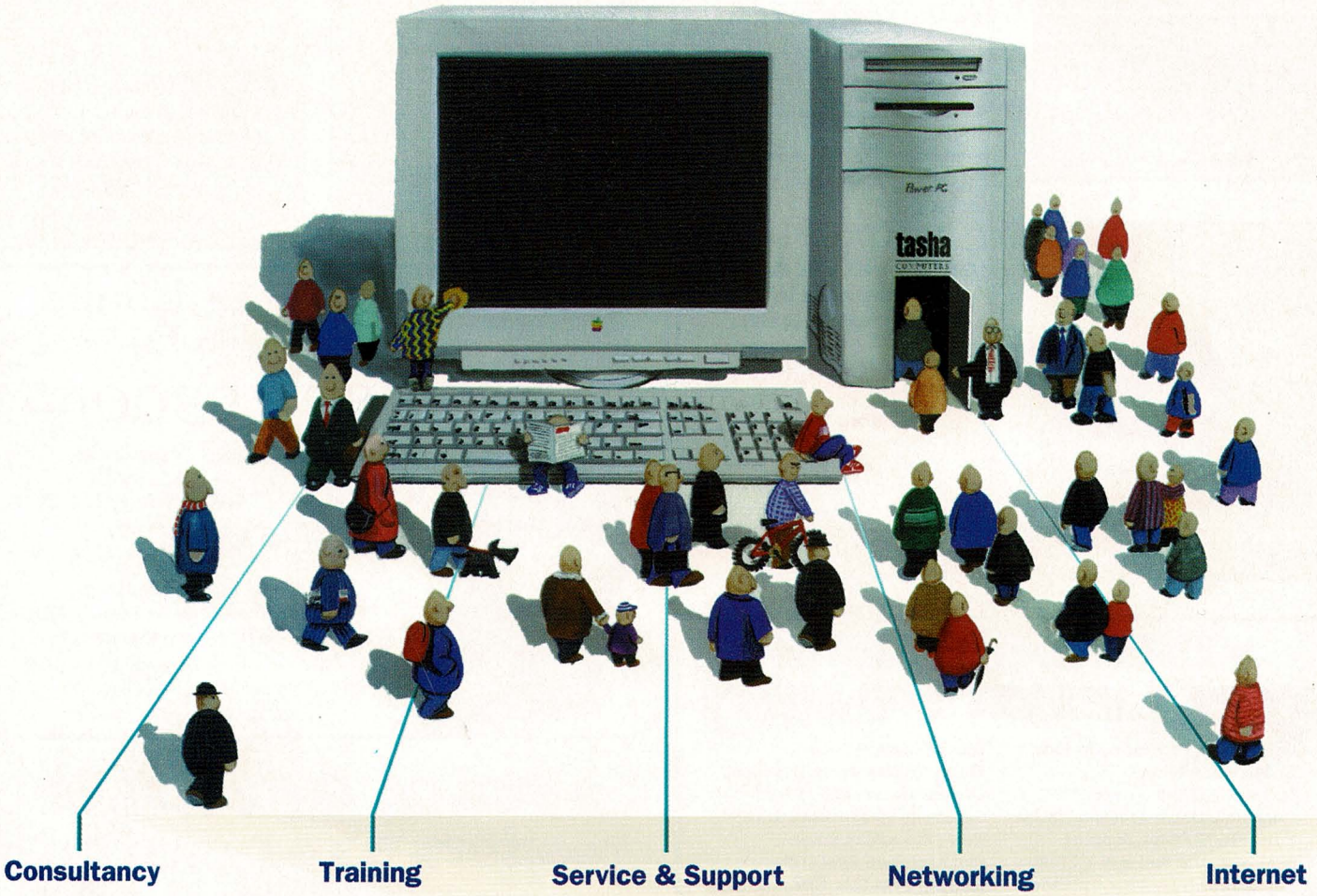

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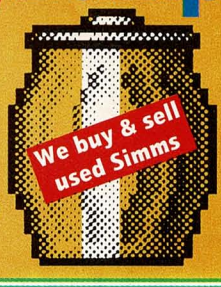

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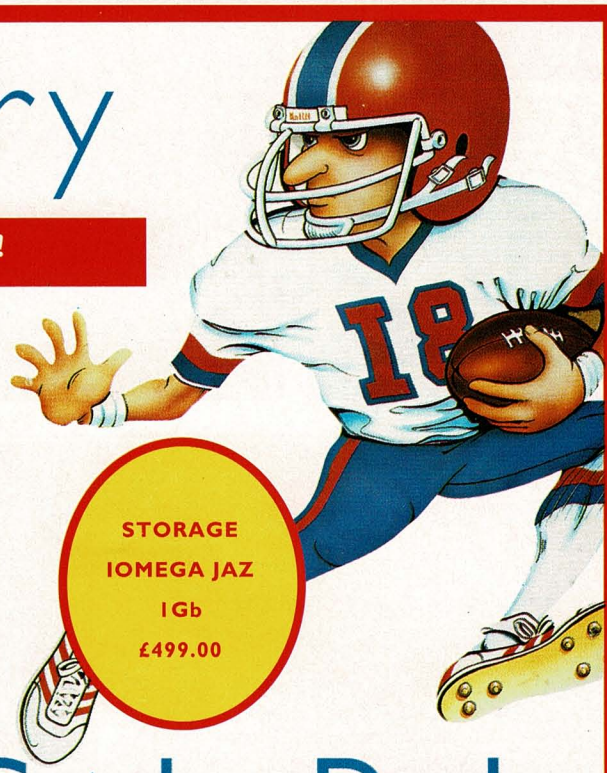

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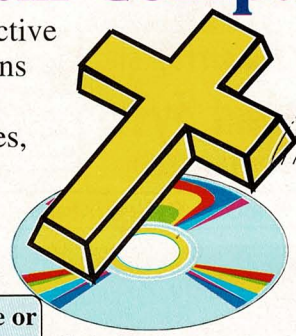

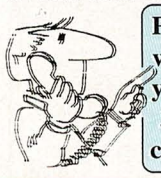

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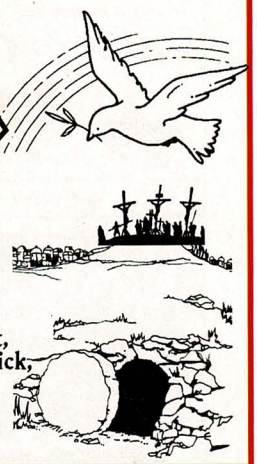

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50,053!

Taking the next step – the Tiny Zone

Hello and welcome again to Tiny Zone, the section of MACFORMAT that can't but advance by small steps. Doesn't the history of Apple make fascinating reading? It's a classic rags-to-riches, oh-dear-now-how-do-we-keep-this-up story. After small beginnings in a garage (and what seems slow and painstaking progress for its first seven years), once the Mac itself appears its rate of growth is just amazing. In nine years it sold ten million computers, and then its next ten million in just two years more. When it created the PowerMac, it sold a million of the new machines in only about ten months. Then there's the rate at which the Mac itself has evolved. Somebody observed that the processing power of computers doubles every 18 months or so (Moore's law, I think it's called). It seems even faster with Macs – just compare a PowerMac to a Plus. Mind you, it's just as well Macs are so much more powerful now, considering how software is demanding more and more. On our old Mac Plus, System 6 takes all of 500K of RAM; running System 7.5 on a PowerMac you'd be lucky to get much change from 4Mb. Even games now require at least a PowerMac. Alex tried out last issue's Cover CD demo of *FA/18 v2* on his Quadra 700, and just couldn't seem to build up enough speed to actually take off. Still, that's just as well: even *Tetris* is too fast for him. Pity really that users don't evolve as fast as their Macs...

NEXT ISSUE

PRINTING

Perfect printouts

Inkjet or laser? PostScript or QuickDraw? Colour or mono? DPI, CMYK, GX? We explain what all the printing jargon actually means and show you how to get the best possible output from your printer, whatever type it is

Colour printers

We test the latest affordable colour printers, including Apple's two new colour StyleWriters

Live Picture vs xRes

Two of the contenders for *Photoshop's* image processing crown have just been updated. We put *Live Picture 2.5* head-to-head with *xRes 2.0* – is either now a serious alternative?

PLUS *Al Unser Jr Arcade Racing* and *Star Trek TNG* reviewed ■ How to combine text and graphics in *ClarisWorks* ■ Put it all together in *Apple Media Tool* ■ The latest news and authoritative reviews

ARE YOU A WINNER?

In MACFORMAT 33, we gave you the chance to win the latest 'Sim' game from Maxis, *SimIsle*, plus associated goodies. Robert Meyers of Dorchester and Rich Green of Edgbaston each win a copy of the game, a giant WWF panda (stuffed? You should have *seen* how much it ate!) and a *SimIsle* mouse mat. The next ten each get the game and a mouse mat: Hilary Wilson of Cardiff; Frank Webster of Oxford; Stuart Marshall of Birmingham; Miss C Eaton of Norfolk; Chris Carrick of Bishop Auckland; Kirk Cohen of Grimsby; Jason Byng of Alfreton, Derbyshire; James Ball of Petersfield, Hants; Terry Cymbalisty of Morley, West Yorks; and N Elder of Warwick. Ten more runners-up each get a *SimIsle* mouse mat: Linda Nicolson of Tayport, Fife; Dr Thomas Ryckmans, all the way from Nagoya, Japan; David Thalenberg of Braintree; Peter King of Manchester; John Harris of Cheltenham; Jane Frances Keane of Houston (not the US one); David Blenkinsopp of Scarborough; Ms C Bishop of Crockham Hill, Kent; Christopher Beckett of Market Drayton; and Marco Micallef of Malta. Well done, all!

MACFORMAT 38 goes on sale on Thursday 9 May

Available with high density floppy disk or CD-ROM. Ask your newsagent to save you a copy or see page 71 for our special subscription offers

Win your choice of upgrades from Mygate

Get your Mac running just the way you want with our pick 'n' mix competition. You could win upgrades of your choice worth over £580, courtesy of Mygate.

As much as you love your Mac, do you ever wish it had a bit more clout? As we've reported in our cover feature this issue, there are a huge number of ways you can get your Mac to be faster, smarter, bigger and better. Now you have the chance to upgrade your Mac however you choose with the range of solutions from Mygate Computing.

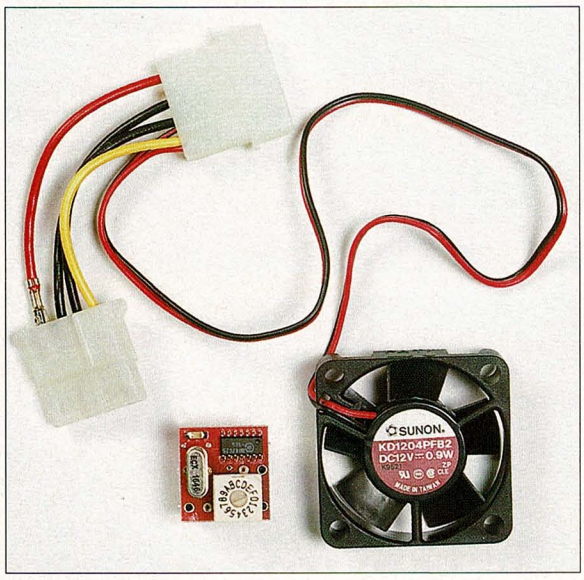
Established in 1991, Mygate Computing is a family-owned business that offers professional advice on a variety of technical and business computing issues. Mygate specialises in upgrade products for the Mac as part of its broader range of hardware and software. Mygate caters for your need to make the most of your Mac, offering cost-effective ways of enhancing your Mac's performance.

Mygate is offering the opportunity to get your Mac upgraded by choosing from its wide choice of RAM chips, disk caches, maths co-processors, hard drives and more. You can choose products to the value of £587.50 – £500 plus VAT. You can treat it as a £587 discount and spend extra money if you wish.

Here are just a few of the different ways you could improve your Mac if you win. The DayStar series of PowerPC cards turns your Mac into a PowerMac. The £558 PowerCard 601, for example, transforms your Performa 475 into a PowerMac with 601 chip running at 50MHz. The Thunder card can boost your humble LC, LCII or Performa 400 up to the same speed as a Mac IIvx for only £116, leaving plenty over for a hard drive.

The Warp Factor series is another bargain, offering a clock chip speed rate increase on your PowerMac. Make your 8100/100 or 110 into an 8100/135 for only £105, for example. And the Xceed Colour Fusion Card enables your Performa 630 to display a 17-inch image with millions of colours, giving it superb graphics abilities for £441.

If you'd like to win this great chance to give your Mac a treat, all you have to do is answer the three simple questions below and send us your entry on a postcard or the back of a sealed-down envelope. The closing date is Friday 17 May 1996.

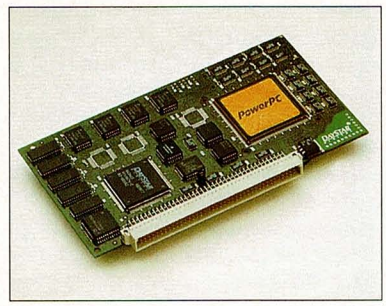


Clock chip kits like this XLR8 Warp Factor gadget can speed up your PowerMac by up to 40% – one of the items you could win in our competition.

The rules

The prize is your choice of Mac upgrade products from the range offered by Mygate Computing Ltd, to a value of £587.50 – £500 plus VAT. The value of the products will be based on Mygate's prices on the closing date of the competition, Friday 17 May 1996. If the value of goods you choose is more than this total, you must settle the balance according to Mygate's normal trading terms. The entire prize must be claimed at the same time. There is no cash alternative for the prize or any part of it.

Employees of Mygate Computing Ltd, Future Publishing Ltd or associated companies, and their families, are not eligible to enter. Multiple entries are not allowed, unless on the back of a floating point unit. The editor's decision is final and no correspondence will be entered into. Please state if you don't want your name added to a mailing list. MG



DayStar's Turbo 601 upgrade card turns your Mac II into a PowerMac – one of your many choices.

THE QUESTIONS

1. In which year was Mygate established?
(a) 1990
(b) 1991
(c) 1992

2. What is the name of the Xceed card that enhances your Performa 630's graphics capabilities?
(a) Colour Fusion
(b) Colour Fission
(c) Cold Fusion

3. *Star Trek* inspired the name of which clock chip kit?
(a) Enterprise
(b) Warp Factor
(c) Tribble

Send your answers with your name and address to: 'I Need a Boost' Compo, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW. A daytime phone number would also be handy, so we can contact you when you win.

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The two day Photoshop Power Days will teach you the most important new features of Photoshop. You'll learn the essential steps for preparing scanned images; best methods for outputting, colour correcting, and how to use all of the amazingly powerful features of this dynamic program. Photoshop experts will show you how to save valuable disk space, and increase your speed and professionalism.

Similar workshops charge up to £1,500 per day but with MacAcademy each course costs just £299* plus VAT for both days. Spaces are strictly limited so book now by phoning Freephone 0800 83 40 43. Priority will be given to Club members so please quote your membership number.

DATES:	COURSE	VENUE
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May 20-21	**QuarkXPress**	London - Olympia Hilton
May 23-24	**Photoshop**	London - Olympia Hilton
May 20-21	**Photoshop**	Edinburgh Hilton National
May 23-24	**QuarkXPress**	Edinburgh Hilton National

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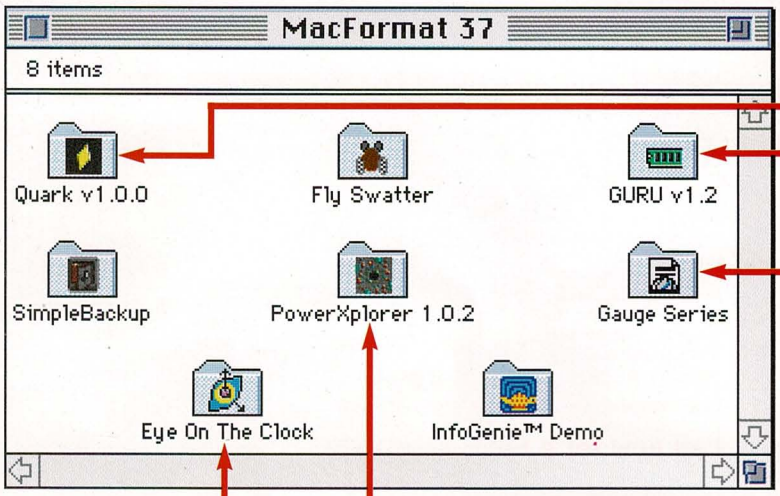
3 MEGABYTES OF GREAT MAC SOFTWARE!

MACFORMAT

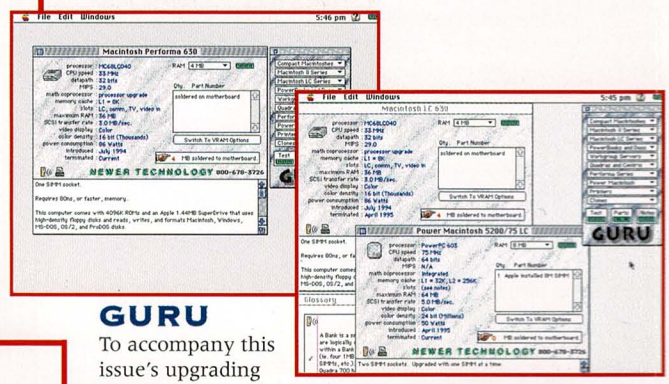
ON THE DISK THIS ISSUE...

Squeezed onto this issue's Cover Disk is a great range of software for your Mac. To find out what RAM you need to buy to upgrade your Mac, try out *GURU, the Guide to Ram Upgrades*. Or if you fancy putting your Mac to the test, the tools in *Gauge Series* are just what you need. If you want a low-cost database, try out the *InfoGenie* demo. *Eye On the Clock* will help to keep you posted on how close the dreaded deadlines are on your projects. Once you're past your deadline you can try out the two games, *Quark* and *Fly Swatter* – sure to help relieve the stress!



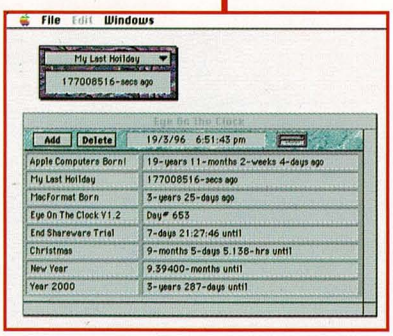
QUARK V1.0.0

If you like good old-fashioned blast-'em-up space games, *Quark* is right up your street. It's similar to the classic *Asteroids*, but you'll need skill to get to the higher levels. Not all screens are simply a matter of shooting things as quickly as possible – some levels require careful thought and clever ship control.



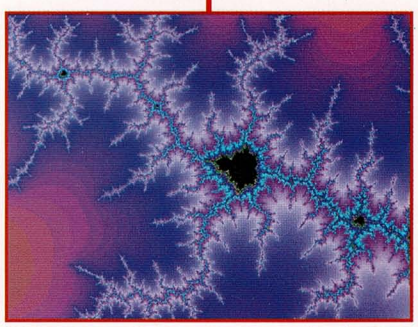
GURU

To accompany this issue's upgrading feature, here's a comprehensive guide to upgrading your RAM. Just about every Mac ever made is listed in the guide and there are full details of what's inside each model, with a guide to what RAM upgrades each can accept. There is also a handy general info section to help you if you get stuck with any of the technical jargon.


File Edit Windows
My Last Holiday
177008516-secs ago
Add
Delete
19/3/96 6:51:43 pm
Apple Computers Born! 19-years 11-months 2-weeks 4-days ago
My Last Holiday 177008516-secs ago
MacFormat Born 3-years 25-days ago
Eye On The Clock V1.2 Day# 653
End Shareware Trial 7-days 21:27:46 until
Christmas 9-months 5-days 5.138-hrs until
New Year 9.39400-months until
Year 2000 3-years 287-days until

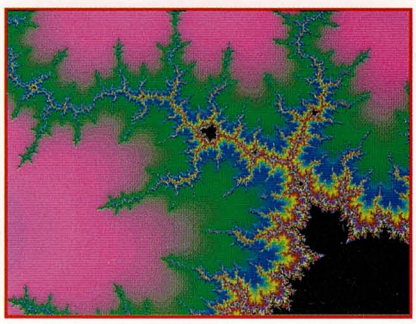
EYE ON THE CLOCK

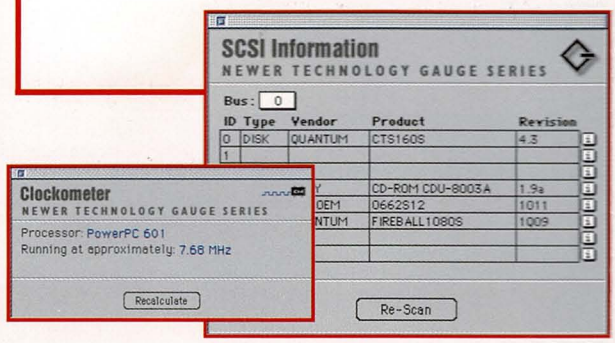
If you have trouble hitting your deadlines, forget important dates or just like watching the clock, *Eye On The Clock* is a must. You can enter all your important dates, both past and future, and *Eye On The Clock* then displays a countdown either to or from the date. You can even set it up so that it counts down the seconds remaining to your next holiday, then sit and watch until the day arrives...



POWERXPLORER 1.0.2

Fractals at the click of a button! The colour palette cycles to produce dazzling effects, and you can zoom in on any section of the screen. *PowerXplorer* requires a Mac with an FPU (maths co-processor) – it will run on LCs or non-PowerPC Performas with *SoftwareFPU*, but very slowly.





GAUGE SERIES

A great set of utilities that enables you to test your Mac to the full. There is a Clockometer to test how fast your machine is, a RAMometer to make sure that your RAM is working as it should, as well as utilities which give you info on your SCSI devices and any upgrade cards installed.